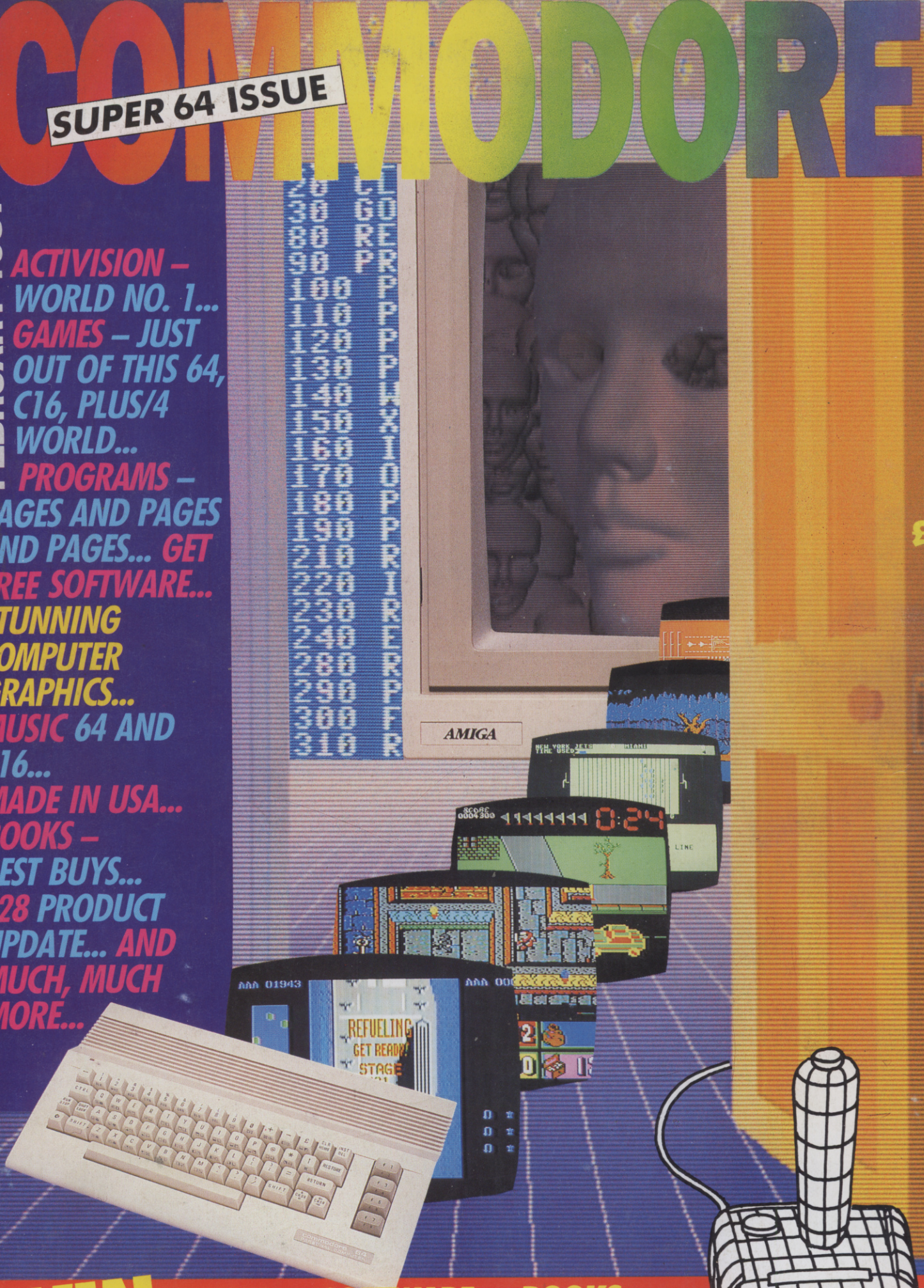
COMMODORE

SUPER 64 ISSUE

FEBRUARY 1987

ACTIVISION – WORLD NO. 1... GAMES – JUST OUT OF THIS 64, C16, PLUS/4 WORLD... PROGRAMS – PAGES AND PAGES AND PAGES... GET FREE SOFTWARE... STUNNING COMPUTER GRAPHICS... MUSIC 64 AND C16... MADE IN USA... BOOKS – BEST BUYS... 128 PRODUCT UPDATE... AND MUCH, MUCH MORE...



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Good news!

If you want to get the most out of your Commodore 128 or 64, we have goods news for you. The Pocket 128 and 64 Series of Software both offer you serious, professional quality software packages that are easy to use and inexpensive.

How easy?

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How serious?

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Fast, powerful, easy to learn and inexpensive.
Say, that is good news!

All for one and one for all

Pocket 128 or 64 Software Packages offer you something else you might not expect ... integration. You can combine the output of Pocket Writer, Pocket Filer and Pocket Planner into one piece of work. You can create a finished document with graphs, then send individually addressed copies.

The bottom line is Solutions

The word solutions is our middle name and bottom line. When you purchase Pocket 128 or 64 software, you can count on it to solve your problems.

For information write to:
Digital Solutions
80 Wertheim Court, Unit 2
Richmond Hill, Ontario
Canada L4B 1B9
Telephone (416) 731-8775

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Pocket Writer 128 or 64 Word Processing

What you see is what you get

With Pocket Writer 128 or 64, there's no more guessing what text will look like when you print it. What you see is what you get ... on screen and in print. There are no fancy codes to memorize, no broken words at the end of a line.

Easy to learn and sophisticated. Pocket Writer 128 or 64 offers standard word processing features plus ...

- on-screen formatting and wordwrap
- on-screen **boldface**, underlines and *italics*
- no complicated format commands to clutter text
- on-screen help at all levels
- spelling-checker lets you add words to your dictionary
- 40 or 80 columns on screen
- files compatible with PaperClip™ or other word processors

Pocket Planner 128 or 64 Computerized Spreadsheet

Make fast work of budgeting and forecasting

Pocket Planner 128 or 64 software lets you make fast work of all your bookkeeping chores. Cheque books, household accounts, business forecasting and bookkeeping are just some of the jobs that Pocket Planner 128 or 64 packages make easier. You can even create four different kinds of graphs.

Accurate, sophisticated and easy to use. Pocket Planner 128 or 64 offers standard spreadsheet features plus ...

- accuracy up to 16 digits, about twice as many as most spreadsheets for the Commodore 128 or 64
- sideways printing available on dot matrix printers, for oversized spreadsheets that won't fit on standard paper
- **on-screen help** at all levels
- compatible with VisiCalc™ files
- 80 column on-screen option for the Commodore 64 in addition to the standard 40 columns
- graphics include **bar**, **stacked bar**, **line** and **pie** graphs that can also be used in word processing files
- **smart evaluation** of formulae for accurate complex matrices

Pocket Filer 128 or 64 Database Manager

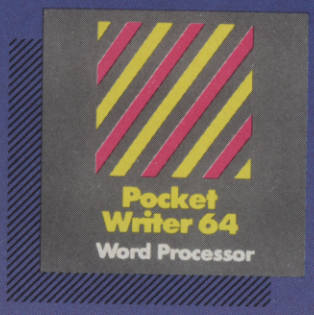
Database management made easy

With Pocket Filer 128 or 64, you can organize mailing lists, addresses, inventories, telephone numbers, recipes and other information in an easily accessible form. Use it with Pocket Writer 128 or 64 (or other word processors) to construct individually customized form letters.

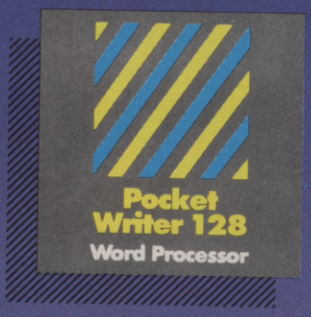
Pocket Filer 128 or 64 packages are fast, sophisticated and truly easy to use. In addition to standard database features they offer ...

- use up to 255 fields per record (2,000 characters per record)
- sorts by up to 9 criteria, can save 9 different sorts
- print **labels** in multiple columns
- flexible report formatting including **headers** and **footers**
- optional password protection including **limited access viewing** or **updating**
- on-screen help at all levels
- print from any record to any record
- arithmetic and trigonometric functions in **reports** using up to 16 digit accuracy

Solutions!



PW 128/64 Dictionary
also available



Best-selling software for Your Commodore 128 or 64

You want the very best software you can find for your Commodore 128 or 64, right?

You want integrated software — word processing, database and spreadsheet applications — at a sensible price. But, you also want top-of-the-line features. Well, our Pocket 128/64 software goes one better.

With Pocket 128 or 64, you'll find all the features you can imagine . . . and then some. And Pocket 128/64 is so easy to use, you won't even need the reference guide. On-screen and in memory instructions will have you up and running in less than 30 minutes, even if you've never used a computer before.

Pocket Writer 128 or 64, Pocket Planner 128 or 64 and Pocket Filer 128 or 64 . . . **Solutions** at sensible prices from Digital Solutions Inc.

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Canada L4B 1B9
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FAX: (416) 731-8915
Telex: 06-964501

Pocket Writer 128 and 64 are available in French — full AZERTY keyboard support.

The best value Commodore magazine in the Universe!

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FEBRUARY 1987

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64 POWER

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FREE SOFTWARE!

See page 7

NEXT MONTH

More 64 Power... Electronic Cash... Midi... Simulations... Basic... Football Fun... you can't *afford* to be without it!

Start queueing now or place your order for the best value Commodore magazine!

New Champion!

The Final of Mikro-Gen's National Computer Games Championship was held at the Savoy Hotel, on Guy Fawkes day.

Mikro-Gen unveiled their brand new game Cop Out, for the Final — ensuring no-one had the advantage of practice. The Finals have shown that the UK's Champion Computer Game Player is David Litherland, aged 17, from Horwich in Lancashire, who managed to score an incredible 27,150 points in one game. His closest rival Christopher Kenney, aged 16, scored 21,600.

Earlier this year, during the PCW Show at Olympia, Mikro-Gen offered visitors to their stand the opportunity to become a Finalist in the National Computer Games Championship. Derek Pruitt, aged 17, from Stoke-on-Trent was the best blaster at the Show. However, he turned out to be the *worst* at the Finals! He came in last with the score of 5,150. The youngest Finalist was James McNiven, aged 12, who scored 14,350.

Apart from the prestige attached to being the UK's champion gamer, David Litherland has had his bank balance increased by £200, and has an impressive trophy, which is his to keep. Christopher Kenney was awarded a cash prize and the runner-up shield. Each of the 10 Finalists was given a qualifying medal, and their own copy of Cop Out.

Piranha bites into U.S.

Piranha have just signed up a deal they estimate is going to bring them a six figure slice of the U.S. consumer market over the next year. Tony Feldman, Piranha's publishing director, has just got back from the States and a series of meetings with some of the biggest players in the U.S. market. After some tough negotiations a deal has been hammered out with Spinnaker Software which initially gives them Commodore rights for Piranha's strategy-arcade game, "Strike Force Cobra". Tony Feldman commented, "The Spinnaker team were really excited by Strike Force. Don't believe the U.S. games market is dead . . . Spinnaker alone are shifting volume that would make the British Industry turn bright green! They expect to crank Strike Force sales well over the 100,000 mark and at $20 a time that's pretty good revenue for all concerned. They're also very keen on our two latest releases, "Rogue Trooper" and "Nosferatu the Vampyre" and we expect these to be in the U.S. market by early Spring. With the really gratifying success of our first titles here in the U.K., all of us at Piranha are delighted at this breakthrough in the States."

News of Piranha's agreement with Spinnaker comes hard on the heels of a series of distribution deals for Piranha's games range. These cover Australia, South America and India, together with a number of European countries which can't be reached by direct sales by UK distributors. Feldman reports one contract close to completion with an Iron Curtain country and hopes to do increasing business in Eastern Europe where he says he's confident he can get paid in currency a lot harder than vodka.

New Anco Worldwide

Anco Software are bringing out a number of new titles that look like causing quite a furore, especially in the games field.

ANCO SOFTWARE was born out of ANIROG SOFTWARE, a long time Commodore software company. Serious illness of one of the partners made the continuation of ANIROG difficult and ANCO started early this year. It has like ANIROG given all Commodore computers full support with special emphasis on C16 and PLUS 4. ANCO works closely with several overseas companies with strong Commodore connections. From KINGSOFT in Germany came WINTER EVENTS soon to be surpassed in graphics by SUMMER EVENTS, LEGIONAIRE and BRIDGHEAD. From ARTWORX in the USA the programmes like BRIDGE for CBM 64, PLUS 4 and AMIGA and STRIP POKER for PLUS 4 and AMIGA. Two star programmes to be released in the New Year, ESCAPE FROM PARADISE and MAGIC MADNESS on CBM 64 have been written by TEQUILLA of Belgium who are also writing one of the events for ANCO's ambitious release WINTER EVENTS for CBM 64 and AMIGA.

ANCO is negotiating the rights to publish LINKWORD, an excellent and internationally acclaimed language teaching course. Initially four languages French, German, Spanish and Italian will be covered. The follow up courses to O'level will also be published and will be available for PLUS 4, CBM 64, AMIGA and COMMODORE PC.

ANCO are also in the throes of getting the rights to publish a range of maths teaching programs suitable for ages 7 to 16 for PLUS 4, CBM 64 and AMIGA. Realising that many users are C16 owners and will therefore be deprived of some excellent PLUS 4 software in the pipe line, ANCO has also designed 64K RAM Expansion Pack for C16 owners.

Comms Tester

The interestingly named Jet Computer of Sweden have launched a "Comtest" on the UK market. Comtest is a complete data communication troubleshooter for engineers, computer salesman and those who install, repair or use RS. 232C/V.24 equipment. It is lightweight, line powered and popular priced.

Comtest can break and cross-patch all 25 lines by means of the dual-in-line switch, the jumper cables and the contacts on both sides of the switch.

Comtest is designed with 26 pairs of LEDs and shows all 23 signals simultaneously with tri-state indication.

The Comtest comes complete with 8 jumper cables and a small pouch for transport.

Price: £83 plus VAT

Contact: MICROCOMMS LTD, Ponsanooth, Truro, Cornwall TR3 7ES, Tel: (0872) 865060.

..news...news...news...news

Error-Free Minidisks

Improved design, packaging and testing are among the benefits claimed of Optima, a new top-of-the-range minidisk launched by Verbatim, magnetic media manufacturer.

The Optima range is the result of three years of research and development by Vertbatim, part of the Eastman Kodak Corporation, in an effort to produce a diskette which sets new standards of security and convenience.

Optima disks are subjected to more than 100 tests during manufacture. During these intensive durability tests Optima achieved an average in excess of 76 million revolutions without failure when run continuously at ambient room temperature. Optima is also tested to a 70 per cent clipping level, is certified 100 per cent error proof and carries a lifetime guarantee.

The specially formulated lubricant used by Verbatim in Optima produces major retention and lubrication even

when operating in temperatures as low as 5 degrees Centigrade. This is because its comparatively high molecular weight reduces volatility and prevents excessive migration from surface to liner.

The liner itself is made from a new fibre combination which it is claimed results in more efficient debris clearance than liners used previously. Its jacket is made from a special PVC which allows operation without deformation in temperatures of over 70 degrees Centigrade.

Hub-ring of the new Optima is an ultra-thin 76 micron, gold ring which gives rigidity and support to the disk without impeding the drive.

A plastic 'Slimpak' dust and moisture-resistant box comes as standard with all Optima disks.

Optima complements Verbatim's other two products — Datalife, the largest selling 'floppy disc' in the world, and Verex, both of which come in 5 ¼ inch minidisk and 8 inch formats. Datalife is also available in a 3½ inch format.

40,000 a Day

Following their prediction that they would make serious inroads into the home computer market with their first batch of releases, Code Masters have announced initial sales of over 40,000 units.

The games appeared in the shops on Monday, October 27th, with advance orders of 25,000. By close of business that evening, re-orders had already accounted for an extra 21,000 units.

One dealer, after seeing the games, rang up Code Master's distributor, Richard Bielby, apologising but said he thought the games were budget titles. When he was informed that they were indeed budget titles and not full-priced games as he suspected, he ordered another three van loads.

Commenting on the initial sales, Jim Darling said "Because of the quality of the games, we expected initial orders to be high and we are accordingly delighted."

Martech's Cosmic Shock

Watch out! The Universe is cracking up. Everything's going really weird. Armies of bouncing balls are on the attack. Carrots are carrying machine guns — This is a job for Superman. No, he's not available. Batman? Nor is he. Batman's gardener? No, even he's busy. Oh no, then it has to be Cosmic Shock Absorber — Martech's definitely fourth division Superhero.

You have not seen the film — there is no book. You'll soon see why.

Written by Chris Fayers, Cosmic Shock Absorber is a fast and furious 3D shoot-em-up and promises to continue Martech's own rapid progress into the first division of games houses.

Sparklers Superbrain

Sparklers boasts it has added a new superbrain to its Think Tank of software developers.

Hitherto unknown in the computer software field, Sparklers believes that Mark Rivers looks set to stun the world with his action-packed, super-sophisticated programs.

Mark, 19 was an electronic engineering student at Liverpool University when he decided to turn a long-time hobby into a living for a while. He has taken a year off to turn his mind to writing computer-based arcade games, which he finds "a lot more exciting than sitting in lectures."

Starting with the S.A.S: Operation Thunderflash, the games developed by Mark will be included in Sparkler's new range of Supersparklers — quality software for £2.99.

The Shocking Facts

Check your back invoices for computer maintenance we are told, and you will find a surprising fact. Many of the bills will almost certainly be in the October-April months.

In the service business they call it "The Season". It is an accepted fact that when the central heating goes on, computer breakdowns increase!

The problem is static. In the USA computer users are spending an estimated $120 million a year on static control products.

This unseen enemy attacks the microchip with alarming force. When relative humidity in the computer room is 10-20%, the simple fact of walking over a carpet can generate a frightening 35,000 volts. Transmit that from your fingertips into a personal computer and the results can be devastating. Certainly, the worst a user feels is a mild shock at that touch. But that electrostatic power, transmitted to the microchip, can lead to data being mislaid, the wrong data appearing on screen — and progressively — eventual breakdown of the chip.

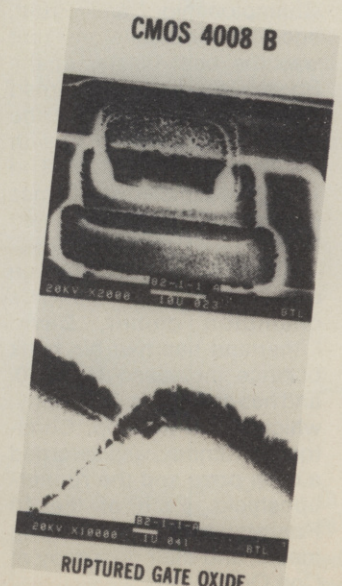
Anti-static wipes, liquid screen cleaners and — more familiar to most — anti-static mats can help, although specialists argue that such products are only partly effective. The most successful anti-static device in the USA, which outsells the mats, sprays and other products, has now been brought to the UK by IS (UK) Limited of Rochdale.

STATIC BUSTER (the appropriate name of the device says it all!) offers an answer to the problem of static electricity.

It consists of a tiny unit with two leads, each with a pick-up head which attaches to a screen and keyboard with a third lead attaching to an earth point. Acting like a static sponge, the STATIC BUSTER diverts electricity from the three vital elements of the operation: screen, keyboard and operator.

Price: £49.95.

Contact: IS (UK) Ltd., 504 Manchester Rd, Sudden, Rochdale, Lancs OL11 3HE. Tel: 0706 59611.



CCI View

Dear Reader,

The new-style 64C is taking its place in the homes of many computer users. We thought it was time to take a close look at the excellent 64 computer from the viewpoint of the new user. Our feature '64 Power' will, we hope, nevertheless interest *all* 64 owners, even experienced ones. We will be examining classic and new products and telling you about ideas and tips you can use that you might have missed or never come across. '64 Power' will be continued in forthcoming issues of CCI.

This CCI includes an increased number of hints and programs. Many readers have told us they find these very helpful. We also have a special *free* software offer. Many programs that have appeared in CCI would be useful to readers who might not want to key them in. So we are making available to regular readers excellent programs and utilities *absolutely free* on cassette, and subsequently on disk. Some magazines charge £4 or more for the same thing . . . The end of the year always brings a rush of new games, so we have increased the games pages too.

Thank you for your letters about the January CCI. It seems to have pleased quite a few of you. We'll go on trying to please programmers, gameplayers and all . . .

Yours sincerely,

Antony H. Jacobson
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Telephone 01-278 0333
Editorial ext: 274
Advertising ext: 280/286
Subscriptions ext: 274
Published by Croftward Limited
Finsbury Business Centre
40 Bowling Green Lane
London EC1R 0NE
Distributed by: Comag, Tavistock Road, West Drayton, Middx UB7 7QE
Printed by Chase Printers Group
Typesetting: Carlton Barclay

Commodore Computing International - an independent magazine for Commodore computer users - is not connected in any way with Commodore Business Machines UK Ltd. It is published 12 times per year by Croftward Limited. The publishers do not accept liability for any incorrect statement or errors contained in material from independent sources or authors which may be reproduced from time to time.

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Strategic Software	65
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Supersoft	OBC
Tri Logic	17
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...news...news...news...news

Trilogic's ESM

Trilogic has launched an addition to its Expert Cartridge, the ESM Module. The ESM is fitted with LED, push button and connector. It fits between the cartridge post and the Expert cartridge and, as with most Trilogic systems, it has no effect on action and can be left connected but otherwise ignored.

When a protected program is loaded which needs the ESM, the LED will glow. The program can be paused and the Experts machine-code monitor is activated. From then on, the Expert can be used in the normal way — to alter, restart or save to disk/tape as you choose.

The new ESM costs only £7.95 inc. VAT and postage.

Contact: Trilogic, 329 Tong Street, Bradford BD4 9QY. Tel: (0274) 684289.

PC Fax

A UK company Comwave, is to sell a package from California that turns a PC into a fax machine.

Gammafax is a package that includes a modem board that is installed into a PC and software for sending and receiving data from facsimile.

The package is to be marketed in the UK by Comwave. Who say "Gammafax is a PC add-on and aims to extend the rapidly growing facsimile network to PC users. No price is yet fixed.

Gammafax communicates directly with any Group III facsimile. It can send text and graphics to fax machines offsite as well as using one onsite as a printer and scanner. it can also download data on to disk and distribute to several fax machines automatically.

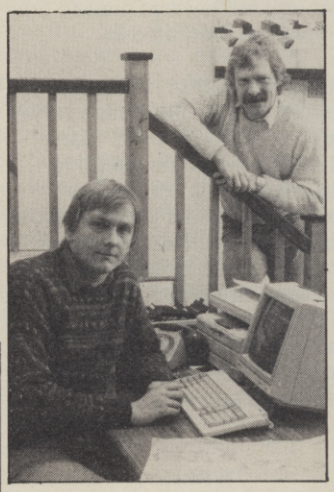
Although it can store documents for unattended transmission it will not work if the PC is being used for other functions. Comwave hopes to develop a version that can work in the background.

Gammafax uses a synchronous, V29, 9600bps board modem which plugs into an IBM PC, XT, AT or compatible with a minimum of 256K Ram and graphic adapter card.

New Palace Moves

Following the success of its latest game ('Sacred Armour of Antiriad') Palace Software is set to expand and to branch out in new directions. The company, never previously known for flooding the market with its products, is stepping up its in-house production and has also started a search for talented games designers and programmers who want to make a name for themselves.

Says Peter Stone, Managing Director: "During the past couple of years we have built a marketing and distribution system for games in the UK and throughout the world that is second to none. We have successfully used this to market games produced by our in-house team. We now want to use these resources to make a success out of games designed and programmed by freelance games designers."



Richard Leinfellner, Head of Production adds: "We are looking for people with exciting ideas in their own style. Unlike many companies we are not planning to release games of arcade conversions, films or comic characters but we want to work with people with original ideas of their own.

"We have a lot of experience in marketing and programming and we have the financial resources to back good ideas."

Any programmers and designers who may be interested should initially phone Peter Stone on 01-278 0751.

Angstrom Chips

Double particle bombardment of surfaces, using both ions (charged atoms) and electrons has been used by Hitachi and Toyohashi University of Japan in a new instrument that allows both viewing (using electrons) and fabrication (using electrons) and fabrication (using ions) to be carried out at microscopic level.

An important part of the development is an emission source which is only one-hundredth the diameter of conventional sources. This tiny point, only 10 angstroms in diameter (an angstrom is one ten-billionth of a metre) produces a very fine beam so that, in electron microscope mode, the definition is very high.

In ion mode, the beam is used for equally high definition fabrication, usually of semiconductor "chips." The beam is switched between electrons and ions by switching the operating voltage from positive to negative. So modern high density chip manufacture becomes possible at very small dimensions with alternate fabrication and inspection viewing.

Printer Control

MacGowan Consultants have released an interesting printer control program for over 91 different printers.

Printer Control is a word processor — but customised for a specific printer. The Editor part of the program is standard but the output section knows all the codes and limitations of the printer and uses this information to program the printer CPU. Thus every facility and special mode or character of the printer is available to the user.

In addition to word processing, Printer Control has a Picture Mode. Bit Mapped pictures may be created and printed (and enlarged).

All registered users of the program are automatically enrolled in a free ADVICE and INFORMATION service.

Seikosha Control

In response to demand a variant of Printer Control was developed to cater specifically for the SEIKOSHA GP100A and 500A range of printers.

These printers have a diabolical character set (best described as lower case 'ascenders'!) and extremely limited control codes.

SEIKOSHA CONTROL has an optional printing method which prints all text in graphics mode using the character set in the program (user definable).

A multi-pass printing system gives full lower case descenders, underline and form and line set commands and produces results comparable with the more exotic printers.

The COMMODORE MPS801 and MPS803 printers have the

atic device in the USA, hich outsells the mats, rays and other products, as now been brought to the K by IS (UK) Limited of ochdale.

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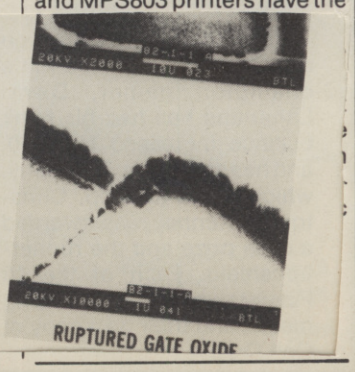

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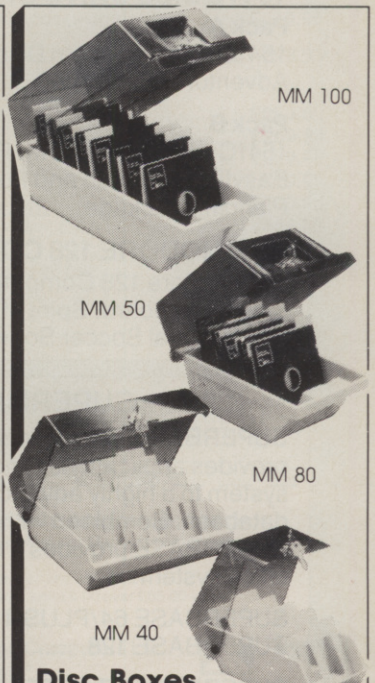

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PLAY ME!

Ian Waugh is back with more suggestions on how to entertain your neighbours with musical add-ons for your Commodore. Part two concludes with drum machines and samplers.

In the music business they say every keyboard player harbours a secret desire to be a drummer. If that's true then the software industry could claim that every computer owner also harbours the same but not so secret desire. At least you would think so by the number of drum machine packages on the market.

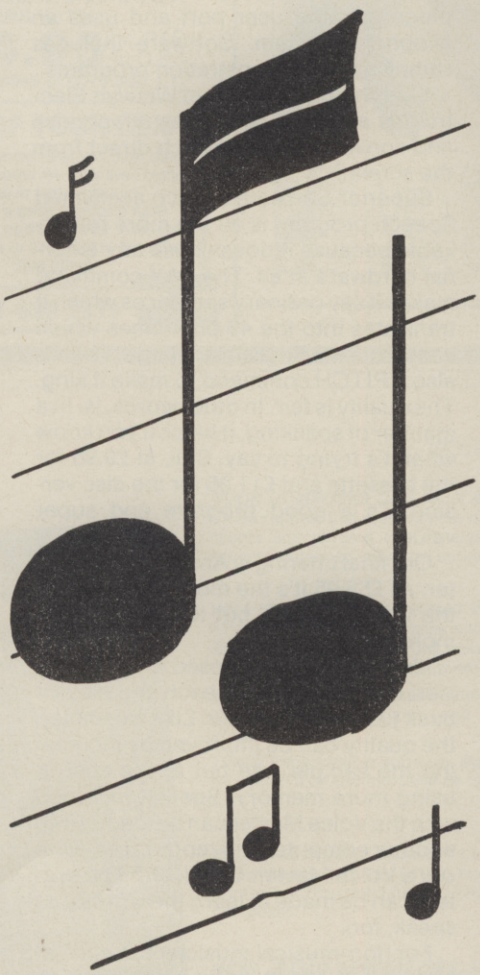
Actually, it's the case of finding an application to fit the technology, *sampling* being the technology in question. Samplers are usually general purpose devices but they are ideally suited to the recording and storing of drum sounds because drum sounds don't last very long — typically around one tenth of a second. If you're quite *au fait* with samplers then skip the next two paragraphs, otherwise read carefully cos I'll be asking questions later.

A sampler is like a tape recorder but instead of storing the recording on audio tape, sounds are converted into a series of numbers (a process know as digitisation) and stored in RAM. In fact, samplers gobble up RAM at an enormous rate and there are severe limits to what you can store even in 128K. Sometimes the software does clever tricks to squeeze more sound into less RAM and here you'll come face to face with such terms as sampling rate and bandwidth. You often have to juggle these around to produce the optimum recording. As this is not a symposium on sampling, I'll keep explanations brief — but you do want *some* idea of what sampling is all about, don't you?

Simply, the bigger the bandwidth and the faster the sampling rate, the better the sound quality. The trouble is, the bigger the numbers, the more RAM is taken to store so you need to trade-off one against the other. Most samplers let you adjust the sampling rate and as you increase it you will find the bandwidth usually reduces and the recording quality drops. Drum sounds — and this is where we came in — can generally be sampled at a reduced bandwidth without too much reduction in quality because they are pretty short, low-pitched sounds. Now that wasn't too difficult, was it?

Datel's Com-Drum. £29.99

The Com-Drum comes with three kits each containing eight drum sounds although some sounds are used in more than one kit. Let's be fair, the sounds are not at all bad considering the price but you can't mix and match sounds and the three kits are all you have to choose from. An Editor package, however, at



around £5.99 will put this right and will contain another 16 instruments.

You can play the sounds live using the QWERTY keys or enter them into a sequencer in real- or step-time. The sequencer can store up to 32 beats in 4/4 time or 24 beats in 3/4 time. You can record up to eight patterns and chain them together to form a song.

There's an external sync facility and a £24.99 MIDI interface is now available. That will interest a lot of people. Datel also produce a sampler (keep reading!) and you can use the Com-Drum software with the sampler but you can't use the sampler software with the Com-Drum. For sampler users the Com-Drum software is available for £9.99.

New on the drum scene is Rhythm King from Supersoft at £39.95 which is sort of half way between the Com-Drum and the Digidrum as you might expect if you look at the prices. It contains three kits of eight drum sounds and allows real-and step-time recording. You can store up to 64 patterns and 16 songs in memory at once and an editor helps whip the patterns into shape. It has keyboard and joystick options and on the 128 it runs in 40 column mode.

Even newer — so new in fact, that it is not yet available although it should be by the time you read this — is Poly Drums (around £20) from Music Sales. This is a program which will turn your Commodore Sound Sampler (see last issue) into a drum machine. It offers real — and step-time input of patterns and allows you to use your own sampled sounds. It will send out MIDI clock pulses, a veritable boon for anyone with MIDI inclinations.

Decisions, decisions! Only you can decide which package to go for. Do you need MIDI or sync facilities, how important is it to have a big choice of sounds, do you want to mix and match them and how important is the overall sound quality? And how much money have you got? It's tough being a musician — especially a poor one.

Onto samplers now. The Commodore Sampler from Music Sales was given the once-over last month — and that's the second time it's been mentioned in this article, too. Since Datel's sampler has already been mentioned let's see what that has to offer.

The price is nice: a tidy £49.99 and the cheapest Commodore sampler on the market — so far. You can sample sounds through the microphone supplied or from an audio in socket. You can adjust the microphone supplied or from an audio in socket. You can adjust the sampling rate to get good short recordings or poorer longer ones (now aren't you glad you read those two paragraphs?). You can also mix one sampler with another one and play them on the QWERTY keys. A simple sequencer facility allows you to record and save your masterpieces.

The editor gives limited editing control over the sounds. You can chop bits off the start and end sections to remove 'silences' or extraneous noises. It also divides the sounds into eight sections which you can swap around. I suppose it's the audio equivalent of having to arrange a number of worlds into a well-known phrase or saying. Odd but interesting! More comprehensive editing software is on the way.

You can play the sounds backwards, forwards (why not sideways?) and loop them. Icing on the cake is provided by a delay facility which offers various degrees of echo and reverberation. It's rather thin icing, however, adequate but good for the money.

Microsounds's Digital Music System costs around £165. It was designed for use with a 4-octave keyboard and there are also MIDI sockets so you can plug in your own synth. Goody! It's quite a comprehensive piece of equipment and an overview like this can hardly cover all its subtleties but here goes. Sampling is only a part of the total package and the system is designed to allow you to produce sophisticated music, sounds and effects.

You are given more control over the sampling process than with the cheaper packages. You can adjust the level at which the input signal will trigger the sampler. A programmable low pass filter helps improve the sampling process by removing unwanted frequencies. Sounds can be reversed, looped, mixed and edited. There's also a keyboard split option and lots of other controls to help you get the most out of the system.

The price is hardly at a professional level but it may be a little higher than the home user would like to pay. However, the system does show its strengths and is superior to the cheaper samplers in many ways. You pays your money...

Costing even more money is the Microvax Sampler from Supersoft at £229.95. Again, this is a sophisticated piece of hardware which is MIDI compatible. Software is on disc but a Pro version which has a few more features is available on cartridge for an extra £70.

The program is easy to control through a series of menu pages. There are eight sampling rates which give good results — the higher the rates te better they are — and you can switch in a compander to reduce aliasing (ringing sounds). The waveform and sections of it can be edited by the use of coloured flags and the Pro cartridge has an Auto Looping Tool which tries to produce glitch-free loops.

It can store up to 16 sounds at once and you can use the sequencer to program up to 24 patterns — back to drum machine thinking now — although the patterns are generally restricted to 4/4 time. The samples can only be played monophonically (ie. one note at a time) which is a shame but the speed of the sequencer can be controlled by an external MIDI clock.

External effects on the basis model are limited to a digital delay but the Pro cartridge includes harmonising, flanging, phasing and modulation effects. All these work on incoming sounds, not the samplers.

This is certainly one of the more sophisticated Commodore sampler packages on the market at the moment and if you are serious about sampling it's really worth checking out.

Voice synthesisers weren't intended to find their way into this roundup but I suppose it could be argued that they are related to the music process — but please don't ask me to elaborate on that. For the sake of completeness then, I'll briefly mention them.

Sweet Talker from Cheetah at £24.95 plugs into the user port and uses an allophone system. Software includes samples and demonstration programs.

Currah Speech 64 from Welwyn Electronics at £21.95 also uses allophones and converts text to speech direct from the screen.

Superior Software's much acclaimed Speech program is all the more remarkable because it doesn't use any external hardware at all. The SAY command makes it say ordinary sentences which it translates into the 49 phonemes which constitute the English language. There's also a PITCH command to make it sing. The quality is fair. In other words, ie. in a manner of speaking, it helps if you know what it's trying to say. Still, at £9.95 for the cassette and £11.95 for the disc version it's a good program and super value.

Our final offering is Anco's Voice Master. At £59.95 it's the most expensive of the voice systems but it can do rather more, too.

It's a digitiser as opposed to a synthesiser: it records your speech and plays it back just like a sampler. Like a sampler, the quality can be improved by increasing the sample rate but at the cost of using more memory. Speech recorded with the Voice Master can be loaded into another computer and reproduced *without* a Voice Master. Good, eh? The system can be made to learn the words you speak, too.

For non-musical musicians, a special feature lets you hum or whistle a tune and the notes appear on a starve as you do so. The result can be edited, saved and printed.

A demo speech disc is available for £2.50 to show you what the Voice Master can do. Programs include a talking keyboard, calculator and clock and a 28-page booklet to explain everything.

So there you are! A quick rundown of some of the current pieces of music hardware and software just waiting to be plugged into your Commodore. Older owners (ie. those who have had a machine for over a year) may recall other pieces of music software. Remember Commodore's Music Composer cartridge (yeugh!), Quicksilva's Ultisynth 64, Romik's Multisound Synthesiser, Supersoft's Music Master, Activision's The Music Studio, Artic's Dancing Feats and The Music Construction Set to name but seven? Some are still available, others seem to have gone the long journey, replaced by more sophisticated programs.

Making music is just one of the numerous applications to which you can put your computer. Most of the music you hear on Top Of The Pops has been produced with the aid of a computer. Whether you're a practising musician or someone who just likes to dabble, there's a music package somewhere to suit you. Make music and have fun!

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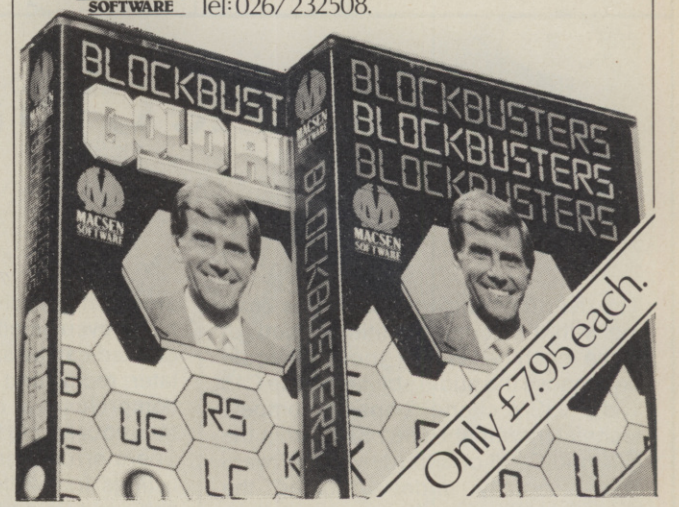

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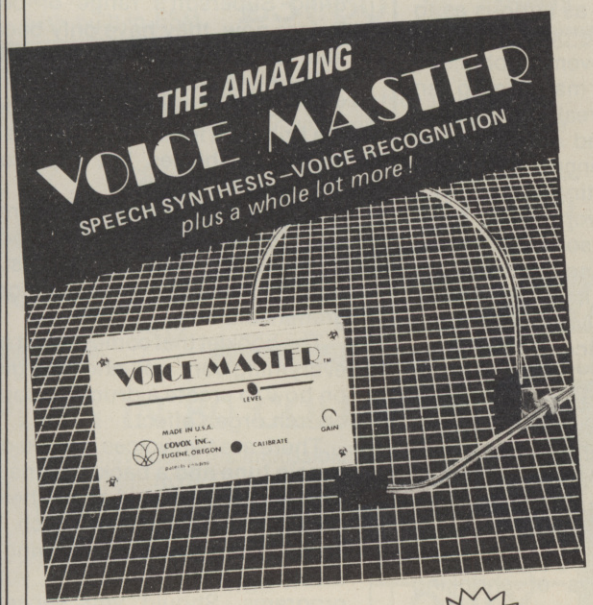

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MUSIC MASTER

for the C16 and PLUS/4

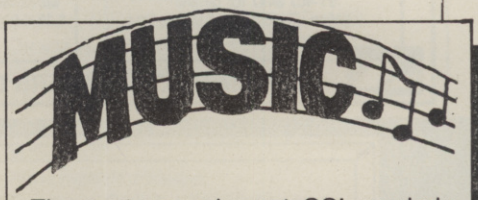
The dearth of software packages dealing with the sound facilities of both of these machines is well known. It could be because the audio abilities of the C16 and PLUS/4 cannot hope to compete technically with the 6581 SID within the C64 and C128 or alternatively software houses totally under-estimated the market for the so-called *poor relations* of Commodore's range of home computers. Those software houses who have taken up the challenge of producing software for the C16 and PLUS/4 have been pleasantly surprised, for example TyneSoft and SuperSoft, and it is from the latter stable that this package originates.

The simple, but effective sound generators of these machines has been harnessed into the production of a synthesiser, sequencer and *musical word-processor*. Each sound channel or voice can be played individually or both voices can be played in unison using the machine keyboard as a piano. There are no less than 10 pre-defined rhythm/pattern accompaniments with the provision of a further one for the user to define. SuperSoft have provided on the system disk a total of 5 demonstration sound files which allow the production of something immediately as well as offering an insight into how a piece of music may be constructed.

The *musical word-processing* section is a screen which scrolls and permits the budding Beethoven an opportunity to compose a score using the sound voices. Full control over the envelope shape is allowed and the ADS (attack, decay and sustain) with adjustments to the volume. I was particularly impressed with the degree of control over the *transpositions*. This allows the selective shifting of notes by a semitone and there are facilities to shift the note's frequency by an even smaller amount. The sound created can be saved to disk or tape for later recall and the manual provides comprehensive details of how to interface your sound files to other programs. There are no less than three program listings in BASIC in order for you to achieve this and the manual also discusses the sound file structure for the benefit of advanced programmers. If this were not enough, there is also a section dealing with MUSIC MASTER for the C64 and the differences between these software products and some useful tips are provided about portability of your sound files.

It always strikes me as curious as to why no audio software packages ever mention the vast improvement obtained by connecting your machine to an amplifier. Or if you are really inventive to a graphic equaliser and a microphone mixing unit. The difference in the quality of sound simply by putting it through an amplifer make it all worthwhile. I can only assume that the software houses are worried about getting repair bills for damaged equipment if it all goes wrong. However, it is all relatively clear in the Programmers Reference Guide/Users Guide for your respective machine in the connectors diagrams. All that is needed is a connection into the amplifier via the **TAPE** or **EXT** input of the amplifier — *not the* ***PHONO*** *or* ***TURNTABLE*** input. If in doubt consult your dealer, who I am sure will be happy to provide a made-up cable for you, particularly in these days of shrinking turnover!

MUSIC MASTER does an extremely competent job as accessing the audio facilities of either the C16 and PLUS/4. Together with the comprehensive manual it provides the best approach for the user who doesn't want to resort to programming in assembly language or alternatively wants to produce something quickly. Well worth a look if you are interested in audio on the C16 and PLUS/4.



Those of you who get CCI regularly (that means everybody) will be familiar with the adverts on the back cover featuring Supersoft's range of products. Before now, they have only been available for the 64, but now Music Master is being released for the C16 and Plus 4. You wouldn't think a music program is the brightest idea with the C16's limited sound capabilities, but Supersoft have done a great job.

There are a multitude of different special effects such as Attack, Decay and Sustain. As well as the usual ten rhythms, there is also an additional programmable one.

The booklet that comes with it explains everything very well and also gives tips on how to create a drumlike sound or a church organ effect.

There are two voices, so you can play a main tune and a backing tune as well. This is demonstrated to the best effect on the example piece Trisch Trasch. There is even a listing allowing you to incorporate the tunes into your own programs. Should you subsequently decide to upgrade to a 64, you'd be able to transfer your tunes to that.

This is a professional package with a concise booklet and a good range of capabilities. I would recommend it to anyone.

CK

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MR ROD COUSENS

Activision's Numero Uno Europe

Inside Info

Activision — The Market Leader

Activision claims it is the top selling home computer software company in the world. The big one . . . Number One.

It was started by four friends — to sell in the videocassette market. In spite of the disappearance of that area of games, Activision made it to become a substantial U.S. public company. Its great successes have been classics like Pitfall and probably the largest ever individual games seller Ghostbusters. It works not only out of the U.S. but has offices in Japan, Germany, France and plans to open this year in Spain. Its whole European operation is run from London by Rod Cousens, Activision's British European Managing Director from a very agreeable period house in fashionable Hampstead. Cousens is a quite-spoken, pleasant-mannered 35 year old with an apparently natural wide grey streak in his brown hair. His modest business-like air "I was trained in accountancy" is sometimes belied by the trendy double-breasted suits and white shoes he adopts at computer shows. A matter of some interest to impressionable software girls on these occasions is whether the glasses he once wore have now been replaced by contact lenses . . .

Cousens came to Activision from Argus Software. He ran an insurance brokerage Southampton and tried to sell insurance to the program-writing founders of Quicksilva. He soon became MD. Interestingly, it is believed that Cousens may, cautiously, still not have entirely placed his confidence in the mercurial software business and continue to retain an involvement in his former brokerage.

Quicksilva which had started by supplying the arcade style games for the ZX81 was soon producing a bigger range of games and Cousens claims it was the top U.K. games house when, after eight months of negotiations — "On May 29th 1984!" he says feelingly — he arranged the sale to Argus — a division of a large British public company. While the founders took their money — one to the Barbados — Cousens joined Argus as MD of Quicksilva. It was not a happy relationship. "I had a 3 year contract . . . I left after one year . . I sued them . . . It was painful . . . Quicksilva meant a lot to me . . . It was part of my life" . . . The cool businessman still sounds sore.

With his problems in large companies, it is perhaps strange that Cousens should now be heading up a section of another multinational organisation. But he says his problems at Argus stemmed, in part, from the stifling of individual initiative. He also maintains that a major factor was that Argus set up other labels within the company and that will not happen at Activision. He points out that any software house that tries to fit in as a division of a big company poses questions to the organisational structure. Software companies may not be like ordinary companies . . .

When he left Argus, Cousens flew to the U.S. to see Gregory Fischenbach, Activision's boss. He asked Cousens to head up and to change the perception of Activision as merely a U.S. provider of product. Cousens says bluntly "What is right for one country is not right for another." Electric Dreams is a label set up to deal with that situation. It exports from the U.K. and now creates or markets games in the U.S. and other markets. The successful Spin-Dizzy is an Electric Dreams development

Record Industry

Cousens compares the software business to the record industry where talent best flourishes in a large measure of informality. He cites Virgin as a company which demonstrates the successful bucking of the normal business structures.

He claims Activision, in spite of its size is like that and not afraid to invest in totally novel concepts. However, it hedges its bets with acquisitions like INFOCOM (graphic/text adventures) and Gamestar (sport simulations) "which have a longer life than most games."

It is also moving into low-level business packages with an integrated home productivity package called "Personal Choice" — a planner, filer and word processor for £79.00.

Cousens sees his job as consolidating Activision's strength in a number of different fields which will, he believes, create a magnet for local talent in Europe and also offer a solid base from which to sell the big-name products coming from the U.S. — Howard the Duck, Labyrinth, Shanghai and so on.

"I see the group growing in general contracting in publishing, financing a number of development houses' quality products" A recent deal with System 3 is an example of this.

We point to a pile of familiar blue packages near his desk. "Yes," he admits "Like Rainbird . . . We think they are producing quality products . . . but it doesn't matter what kind of software you're talking about, we're in the entertainment business . . . We shouldn't lose sight of the fact that the industry is only 5 years old but we've already got a new generation . . . the younger brothers. When we started 5 years ago we were writing history !"

Cousens laid back, British-style cool disappears and he takes a more forceful mid Atlantic tone. There are those who know him well who say he aches for a top job where it happens big and fast —in the U.S. " He was always hopping over to the U.S. hoping they'd let him stay . . ." They say that his problems at Argus were also caused by the fact that Quicksilva did not make an big success there. They even claim that his involvement with such industry organisations as GOSH (Guild of Software Houses) and various charitable activities masks a harder, self-aggrandizing side. A number of senior collegues such as Hugh Parnell Thomas and John Phillips have recently departed and that is used to accuse him of a strong streak of personal even ruthless ambition. But is it possible to be a successful businessman without a degree of toughness and ambition?

Perhaps these opinions are just professional jealousy or because Rod Cousens certainly comes across as "Mr Nice Guy" and almost too good to be true. "It's a privilege to be in this industry" he says. "It's been good to me. Softaid? Off the Hook? You have to give something back . . ."

The growth of Activision, its sheer size and growing influence make its MD automatically a leading figure in the software world. So far at Quicksilva and at Activision, Rod Cousens seems to have intelligently understood, anticipated and profited by the route the software market has gone. Perhaps he has even influenced it. As the world market continues to integrate there seems no reason why the strength of Activision and the business-like Rod Cousens should not continue to lead the field. But, like democracy, staying at Number One requires constant vigilance — and a good measure of luck. After all, where is there to go from the top but down?

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Feature

64 POWER

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The ubiquitous Commodore 64 has become to home computers what the Jeep or Land-Rover means to the military forces throughout the world. With total sales worldwide now past the **6,000,000** mark and the introduction of a revamped product in the shape of the Commodore 64C, fresh life has been breathed into this now classic machine. Not that the Commodore 64 has ever really needed such a boost, but given the staggering fact in the fast-changing computer world that the machine dates from 1982 it was felt by Commodore that some cosmetic changes were called for.

The Commodore 64 has a long and impressive pedigree with an ancestry that can be traced back to the original Commodore PET of 1976. It somehow seems a little unreal to be writing about a machine such as the Commodore 64 which in computing chronological terms is considered quite old whilst the PET seems positively medieval. I'm not ashamed to admit that I cut my microcomputer teeth on the Commodore 64 and rather like your very first girlfriend, you tend to retain fond memories of those days. So why does the Commodore 64 continue to sell in such huge numbers? Part of the answer lies in the technology of the machine itself.

One of the basic design concepts of the machine was to make it *accessible* in computing terms. By this I mean that such things as adding a disk drive, printer, tracker-ball or joystick to the system was not going to involve the user in complex wiring or requiring specialist knowledge of the hardware. The approach was to be a one of *plug-in-and-go* and providing the user followed the installation instructions, then this was very much the case. The *central processor unit* (commonly termed the 'processor') selected for the Commodore 64 was based upon the 6502 unit. This processor was the cornerstone of all of Commodore's computer products up until the introduction of the powerful AMIGA, and had found use in several other manufacturer's machines, notably the Apple II-series and the Acorn Electron and BBC as well as some *also-ran* machines such as the Oric (remember it?).

The processor of the Commodore 64 was joined by several other specialist *chips* which provided startling sound and colour graphics for the price. The major advantage that Commodore enjoyed over it s 6502 competitors was the very strong in-house design and production facilities. This enabled the birth of the famous VIC (Video Interface Chip) to first see an application in the VIC-20 computer, the direct predecessor of the Commodore 64. Prior to the introduction of the VIC, home computers did not have colour and when it was announced that this circuit would provide the user with no less than **sixteen** colours, **eight** user-controllable *sprites* together with a whole range of useful goodies for advanced programmers, the result was amazement. Couple this with the audio abilities of the SID chip (Sound Interface Device) and the specialist controller chips, the CIA's and it was little wonder that the Commodore 64 became the best-selling home computer in the world.

In fact the Commodore 64 established the basic requirements for a home computer rather in the fashion of the IBM-PC for business computers. An expansion port, cassette port, peripheral bus, programmable function keys, 40-column display, TV connection, 320 by 200 resolution graphics, sprites, dedicated audio, built-in BASIC and 64k RAM would be the absolute minimum standard if someone decidedto launch a new home computer today. Yet this would form only a minor part of the problem, our mythical manufacturer would have to come up with over 6,000 software titles and this would only place him **level with the Commodore 64!**

The general rule is to bring out the first version of games for the Commodore 64 and then translate it on other machines. No software house would seriously consider marketing a new game unless it could run on the Commodore 64, barring serious technical problems.

But games are only part of the reason for buying a Commodore 64. The versatility of this computer is such that there are very many options open to the user. For example if you wanted to learn more about the world of computers there is a complete regiment of programming languages and software tools. The machine is furnished with a computer language. Commodore BASIC version 2.0. and 99% of users (myself included) take their first tottering steps in computer programming with this BASIC. Commodore BASIC becomes too restrictive then you can purchase one of the many *BASIC language extensions*, the most well-known being *Simon's BASIC*. This adds further commands and functions making the graphics and sound elements of the Commodore 64 more accessible. My own personal choice for moving away from learning BASIC would be COMAL which is very strongly supported by the Independent Commodore Products Group.

Then there are the huge number of what are termed *applications* software pieces for the Commodore 64. Spreadsheets, wordprocessors, databases, accountancy packages, even specialist software for running newsagents and estate agents. The often overlooked fact here is that although the Commodore 64 may have some limitations in the facilities offered by the application software, it is not going to cost the purchaser vast sums of money to discover whether or not their plan is feasible or not.

Make no mistake, the Commodore 64 is here to stay for a long time yet.

The Personal Choice Collection for 64 and C128

You have put away your latest blow-em-to-bits arcade game, hidden your joystick in the bottom drawer and decided to get down to some serious work. It is quite likely the programme you pull out next will be either a Word processor, a Database or a Spreadsheet. When you consider that the majority of business software in use today will fall into one of these three categories it should come as no surprise to find the market awash with them. Up until recently it would be fairly common to have all three products, all by different manufacturers and all incompatible. So to pass from one to the other often meant repetitive data entry or the use of complicated data format programs. When there is a need there is always someone happy to fill in. In this case it seems as though everyone had the same ideal at much the same time. There are now several ('hundreds' sounded a little over the top) packages available that provide all three types of program, all of which can exchange data or read each other's files.

The Personal Choice Collection from Activision is just such a creature. All three components Writer's Choice, Filer's Choice and Planner's Choice are separately boxed and are complete programs in themselves. Each is made up of a disk (Writer's Choice has an extra dictionary disk), a spiral bound operating manual and a quick reference guide. Each disk contains a version of its respective program for the 64, 128 in 80 column and 128 in 40 column. In 128 mode the program will automatically detect the state of the 40/80 key and load the relevant version. 64 users need only type load"*",8,1. The 128/40 column version of Writer's Choice had not been finished when I received my copy and was therefore not reviewed. For the sake of clarity all references made to features/functions of these programmes will be with regard to the 128 version in 80 column mode unless stated otherwise.

Writer's Choice (Word Processor)

Simplicity seems to have been one of the main criteria when this one was written. The first menu display 10 options. These are selected by means of a high lighting bar which is moved with the cursor keys. The first and default option is WRITE. Selecting this will present you with a blank 'page' made up of tiny dots (These can be turned off if required) to represent each character position. Here you can create, add to or change a document. Moving around the screen is accomplished by means of the cursor keys and is very similar to using Commodore's screen editor but with the addition of numerous extra facilities. All the usual commands such as Copy, Move, Search & Replace, Centre Text, Boldface, Underline etc. are available from this panel. On-screen help is available at any time by pressing the HELP key of F3 key. The second option of the main menu is GRAPHIC PREVIEW which is exactly what it is. This is a superb facility which shows you what your document will look like when you print it. This it does by displaying a rectangle that represents a piece of paper. On it are lines that represent each line of text, the position of text on the page and where the end of one page and the beginning of the next come in the text. If you don't like the way the document looks, you can use the main menus third option FORMAT in which you alter the settings for paper size, margins, line spacing, justification etc. Some of the remaining options in the main menu are LOAD, SAVE, DIRECTORY and CLEAR, all of which are self explanatory. UTILITIES is the last option and lets you initialize diskettes, perform print tests, and display the amount of memory remaining for the document you are working on. My only criticism of Writer's Choice is not with the program itself but of the need to exit it in order to use the spelling checker Spell-Right. To use the spelling checker you first need to save your document to disk, turn the computer off and then back on again and load in Spell-Right. You are then directed by the program and what disks to insert. The program compares the words in your document with those in its 50,000 word dictionary. When it finds a word it doesn't recognize it will display a screen showing that part of the document where the word appears with the offending word highlighted. There are four things you can do with a highlighted word. Accept it, correct it, correct it but get Spell-Right to recheck it or if you can't work out what the correct spelling should be, get the spelling checker to look up any words that could be the correct spelling in its inbuilt dictionary. This it does by looking for the words closest in spelling to the misspelt word. These it will display at the bottom of the screen and then give you the option of selecting which spelling you would like to use.

Filer's Choice (Database)

This is by far the easiest database to set up I have ever used. It is quite feasible to set up a simple database in only a few minutes. The main menu only has five options and yet the programme is still capable of some very complex setups. The options can again be selected by moving the highlighting bar with the cusor keys but they can also be chosen by typing the first letter of the option required. DESIGN is the first item on the menu and is probably the most important. When selected it will display a new screen on which you design the layout of the records in your database. Movement around the screen is achieved using the cursor keys. Text can by typed at any position on the screen and will be displayed in your final layout. This enables you to have headings or possibly instructions as to various inputs you might require. Next you enter the field names after which your data is to be entered. These are created by adding a colon immediately after the name. There are two other types of field. A calculating field which permits the results of calculations made on the contents of other fields to be displayed and alternate key fields which are used in conjunction with sorts and searches etc. These are marked by adding an = or tick respectively. One very pleasant surprise here is that you can incorporate spaces in field names. The only restriction being that only single spaces are permissible. Most databases would ignore any text before a space. The lengh of each field is determined by the number of character spaces between the colon at the end of the field name and the beginning of the next field or label and doesn't need to be individually specified. Once you have finished designing your layout and have it to disk you can then start entering your data with ADD. There is little I can say about ADD option except that it has a nice facility whereby you can save a lot of time by recalling data from the previous entries when data is the same from record to record. You can either recall individual fields or all of the last record and then change the bits that are different. The third selection on the main menu is BROWSE. This is used to view, modify and print data in a file. It is possible to search for any component or any record by simply typing the search criteria in its relevant position in the layout and then starting the browse.

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Planner's Choice (Spreadsheet)

Once loaded you find yourself with a typical spreadsheet screen. This is where you'll do most of your work. The top line shows the current location of the cell cursor as column, row. i.e. AA,1. This means the cell cursor is at the intersection of column AA and row 1. Also in the top line you will find the amount of memory for additional entries, reminders that you can obtain help by pressing the HELP key or cancel a command with the ESC key and the words CAPS, SCROLL and RECAP which relate to certain features of Planner's Choice. The second line lets you know what is in the current cell. The third line is known as the input line and is where any text, figures or formulae will appear when you first type them in. At the bottom of the screen is the Function-key menu. This shows what functions are available to you via the function keys. Movement of the cell cursor is accomplished by means of the cursor keys. This is the only area in which I was not completely happy with Planner's Choice. The problem being that in 128 mode, only the 128 cursor keys work and not the old 64 cursor keys. This I find awkward for two reasons. 1) In a spreadsheet the movement of the cursor is one of the most frequent events and it therefore follows that the keys that control its movement are going to be used the most. This being the case they should be in a position where they can be easily accessed and without causing too much hand/wrist strain. This is not the case with the 128's cursor keys. 2) Many 128 owners will have upgraded from a C-64 or Vic 20 (myself included) and will be used to the 64 cursor operation. For the small amount of extra code required to have both sets of cursor keys functional it seems a shame for it to have been omitted. Most of the commands available are entered by first pressing F1 and then a single letter or via the remaining function keys. Most of the usual spreadsheet commands and features are included and are more often than not easier to use. The Commodore DOS can be executed without leaving the programme, thereby avoiding the ever famous classic of typing in a massive masterpiece only to find you need to exit the program (and lose your data) in order to format a data diskette. Planner's Choice is very fast in operation and simple to use. Anyone having ever used a spreadsheet before should find it very easy to get round and should be able to drive it in a very short span of time. The book is clear and concise and should enable someone completely new to the world of spreadsheets to get up and running very quickly.

Conclusion

Over the years I have used numerous word processors, databases and spreadsheets. None have been perfect and it's quite likely none ever will be, but here is a package that I immediately felt at home with. I was able to achieve a workable level of competence with all three programmes in hours instead of the usual days. Many of the features I have often wished for in the past are included as standard. The overall feel was of a quality product. It's good to see that Activision, a company better known for its quality games and entertainment programmes, can fare so well in what is a very different market with some different values. Keep up the good work!

I.B.

'64 Power' continued on page 36

Next month **the second part of our '64 Power' feature covers Word Processing and Home Productivity and more . . .**

COMPETITION RESULTS

DROIDS COMPETITION
David Stephens, E. Sussex; M. Harnden, Lincs; Chris Garbutt, Essex; P. Stephenson, Newcastle; Mike Jones, Leics; David Connor, Liverpool; A. Wright, Norfolk; T. Wright, Oxford; S.J. Reeves, Solihull;

DICTIONARY COMPETITION
Chris Garbutt, Essex.

WORLD CUP FOOTBALL COMPETITION
Patrick Tubby, Norfolk; D. Abbott, Hants; Sean O'kane, N. Ireland; J. Cassidy, Whitley Bay; Krishna Magaraj, India; T. Richards, Lancs; Scott Templeman, London; Stephen Robertson, BFPO 40; Wayne Farrow, N.Yorks; Godfrey Pirotta, Bath; Steve Wood, Staffs; N. Whitworth, Norfolk; D. Edwards, Streetly; P. Richardson, Tyne & Wear; D. Ashcroft, Cheshire; Rajesh Gopal, London; R. Williamson, Essex; Kristian Cassar, Malta; D. Connor, Liverpool; I. Skipp, Middx; N. Havard, W. Glam; J. Arnold, Bath; A. Patterson, Dorset; T. Gibson, Lancs; P. Wyatt, Hants; Hamesh Luthra, Hants; R. London, Huddersfield; John Folly, Middx; J. Gasson, Sussex.

INDOOR SOCCER COMPETITION
A. Bland, Humberside; G. Williamson, Romford; Jennifer Tierney, Scotland; A. Brabazon, Wilts; M. Frantzis, London; C. Newman, Tyne & Wear; S. Heaton, Lancs; Robert Brady, Manchester; Justin Wright, Southsea; S. Bidwell, Sheffield.

TRIVAL PURSUIT COMPETITION
1st: D. J. Cook, Portsmouth,
Runners up: S.J. Reeves, M Jones.

TOUCHDOWN FOOTBALL COMPETITION
Andrew Tate, Whitley Bay; F. Arrijo, Middx; A. Elston, Cornwall; M. Kelly, Merseyside; Chris Garbutt, Essex; Ian Savage, Clwyd; M. Tipple, N. Yorks.

GRAPHIC ADVENTURE CREATOR COMPETITION
Steve Wood, Staffs; Chris Garbutt, Essex; W.K. Tsang, Staffs; David Connor, Liverpool; Mark Turner, W. Glam.

'KRAFT DURCH FREUD' COMPETITION (Strength through joy)
A. Bowden, Bishops Stortford;

WINTER EVENTS COMPETITION
David Lynch, Kent.

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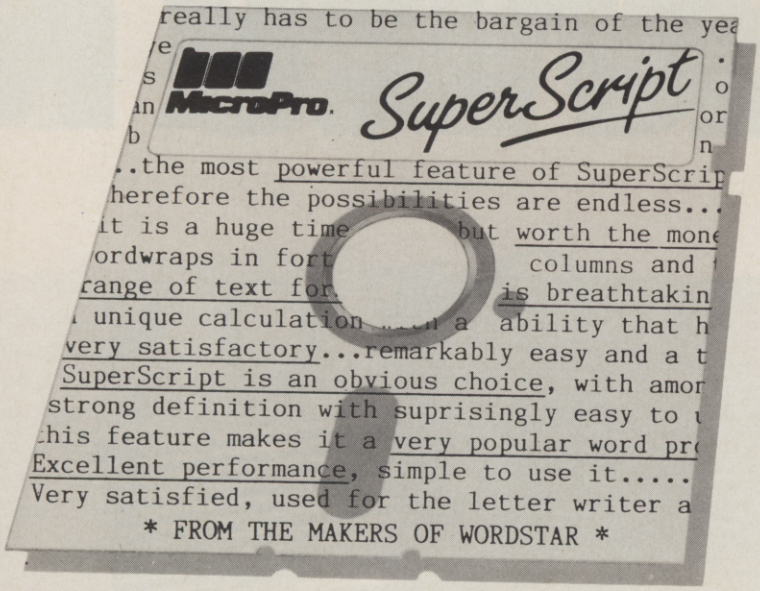

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SCIENTISTS A
DISCOVER NE

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People laughed. People scoffed. And they really freaked out when we told them where we'd found it:

Inside a Commodore 64.

It's called GEOS. And it turns any Commodore into a powerful PC that holds its own against any computer, no matter what kind of fruit it was named after.

GEOS: The superior intelligence. Of course, we always knew Commodores possessed superior brains. It just took GEOS to discover them.

You see, GEOS opens your Commodore to a huge universe that can hold an infinite number of applications. Which means that GEOS can do just about anything the expensive PC's can do, including one thing they can't:

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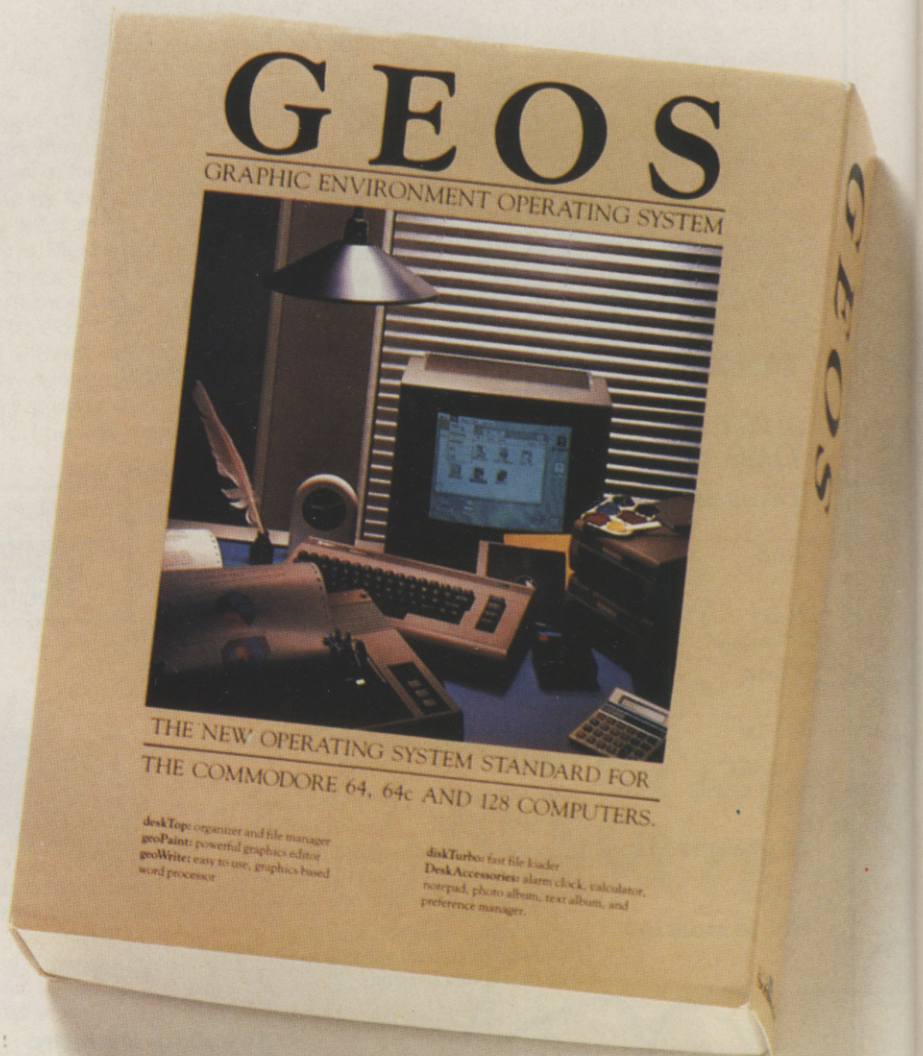
Increase your speed to warp factor 7. The first thing you notice with GEOS is how its diskTurbo speeds up your Commodore's disk loading and storing time.



Not twice or three times as fast. But five to seven times faster than normal. Which lets you streak through files and documents at what seems like warp speed.

And that saves you endless time.

Every universe comes complete with a desk. The way to keep order in our universe is with the GEOS Desktop. It's just like your desk at home, only without the coffee stains.

The Desktop keeps your art and documents filed, and comes

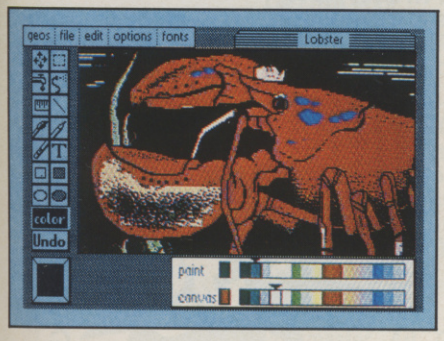
AT BERKELEY
EW UNIVERSE.

with all the accessories you need to keep you organized:

An alarm clock keeps you punctual. A notepad keeps your memos. And a calculator keeps your accountant honest.

How to communicate with a new universe. With geoWrite, you can rearrange your written words. Move blocks of copy. Cut and paste. And even display your text in fonts of different styles and sizes, right on the screen.

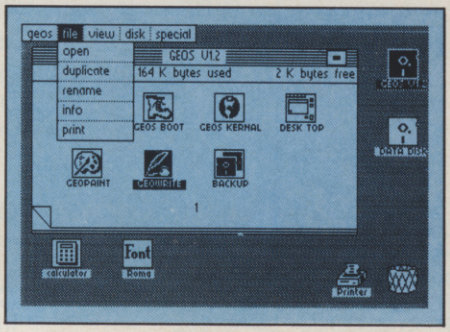
With geoPaint, you become a Michelangelo with a mouse.



Sketching and painting with all kinds of colors, textures and patterns.

You can invert, mirror and rotate images. Insert them into your geoWrite documents. And save them in your GEOS Photo Album for use later.

Finding your way through the universe. The most difficult



thing about a new universe is finding your way around. But with GEOS, you only need to remember two things:

Point and click.

When GEOS offers you options, you just point to your answers and click your mouse or joystick.

You want to draw? Point and click.

You want to write? Point and click.

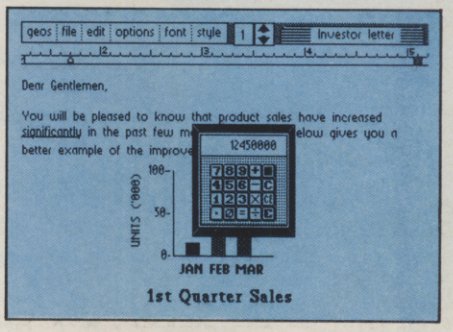
You want to fill in that obtuse rhomboid with an air-brushed geometric pattern in a lighter shade of pink? Point and click.

Easy, huh? And in case you ever do make a mistake, GEOS backs you up with an "Undo" feature that undoes the very last command you entered.

Running out of space. With GEOS, that's hardly likely. Because there's endless space in the universe for new applications.

Unfortunately, there's only so much space in this ad.

So zip down to your nearest software dealer. Tell him you want to explore the new universe in your Commodore.



And if he looks at you like you're some kind of alien, well, just tell him Berkeley Softworks sent you.

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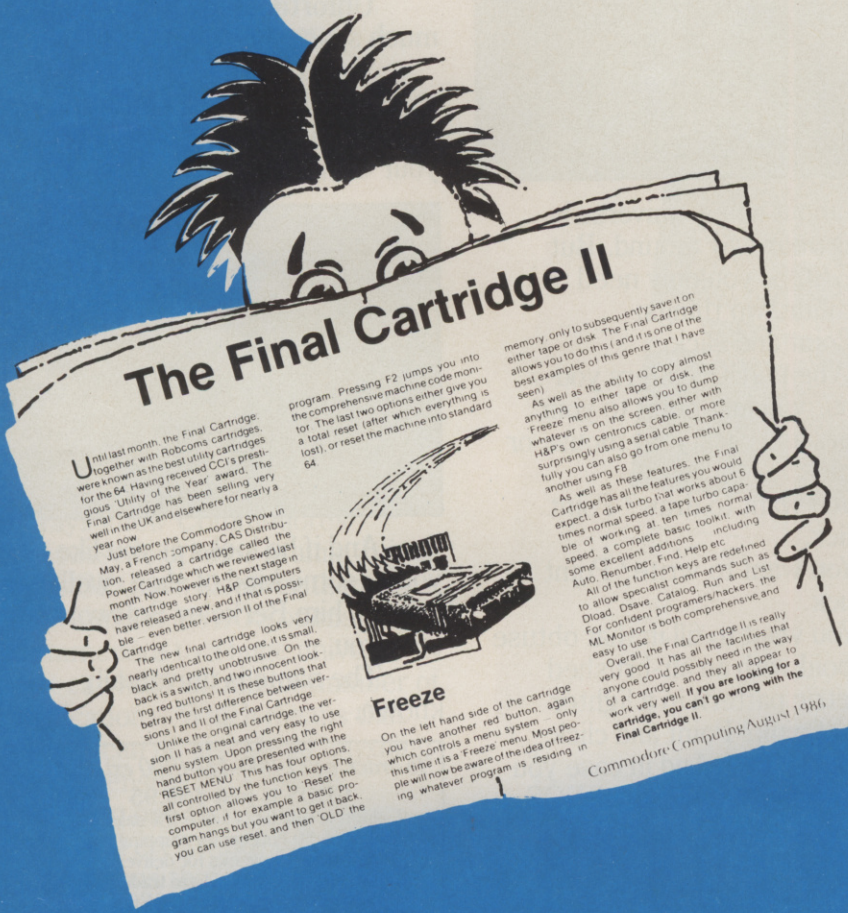

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Andy Moss is one of the UK's most famed adventurers. His expertise in solving mind stretching adventure games is legendary. He will be regularly commenting on all the many and increasingly popular aspects of adventures in C.C.I.'s new section ...

MIND FOREVER VENTURING...

There was a time when brave men took up sword and shield aware of dangers amidst their surroundings, which mattered not for they were heroes. Not once did they deter from their chosen path.
Experienced in the wicked ways of traps and puzzles, they went about their business amassing great treasures from the depths of deep dungeons and slaughtering the odd orc or two. For being an adventurer was a serious business. you could die quite a few times!

Not so nowadays, humour seems to be flavour of the month and there is no shortage of it. Infocom set the ball rolling with some very witty sections in many of their famed classics, and Level 9 have emulated them in their more recent offerings. *Return to Eden* has plenty of humorous little ditties, while, we all remember the Woolly Jumper in the Lords of Time.

The man who is quickly turning out to be the Woody Allen of computer entertainment is Fergus McNeil of Delta 4. His notable works have mainly been spoofs of serious best sellers like Bored of the Rings, The Boggit and Robin of Sherlock. I heartily recommend any Delta 4 game if it's laughs your looking for along with a few puzzles as McNeill's sharp wit is very entertaining and always refreshingly original. He is now sub-contracting his services along with the rest of his team to other software houses, of which the revered Level 9 is one, and I for one look forward to seeing the results of that little partnership!

Add to all these guys the ladies from St. Brides and you have a pretty big section of Britain's adventure market moving towards a humourous bent.

You can almost see it now, down at the Blue Boar Inn which once only fearless adventures used to frequent and discuss the latest in swords. Now it's practical jokes, water squirting flowers and whoopie cushions that are the order of the day!

Adventure News

New Infocom Title Soon

News straight from the U.S. of A, is that come spring we will have a new Infocom title upon us entitled Hollywood Hijinks which, so rumour has it, will be the second in their comedy series following on from Leather Goddesses. Activision, who market Infocom over here now, are playing things close to their chests but have promised me news as soon as they have it. Watch this space.

Silicon Dreams Trilogy

Following the much acclaimed Jewels of Darkness, Rainbird are releasing Silicon Dreams, which comprises of three Level 9 adventures in one box —Snowball, Return to Eden and The Worm in Paradise. The games have been totally rewritten to incorporate Level 9's new parser, type ahead and multi tasking techniques and over 600 illustrations. At £14.95, complete with a 64 page Novella, these adventures are an essential purchase for anyone who missed them last time around and enjoys a challenge.

Infogrames Continue Clouseau

Impressive new French software house Infogrames, are set to release a follow up to their successful detective adventure 'Vera Cruz' entitled 'The Sidney Affair'. It will be based in the same police department as its predecessor and involve intrigue, love and divorce as its plot! Watch this space for more details.

Ad

Heart of Africa
C. 64/128 £14.99

Once in a while a program comes along that is like a breath of fresh air, a guiding light shining out from a dark pile of dross. It's always a pleasure to review something new, highly original and entertaining and when Ariolasoft released Seven Cities of Gold this was it. A reviewer's tonic.

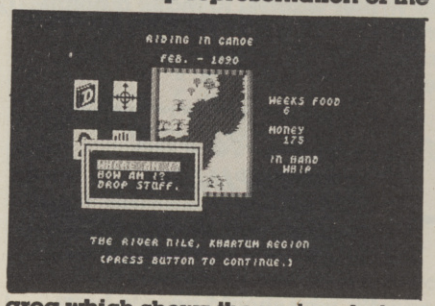
The game was all about exploring uncharted seas and strange new lands, finding cities and rivers and treasures too wonderous to describe. There was only one moan about the game, and that was to create a new world was a rather tedious and time consuming business. Still, you can't have everything and given the limitations of the hardware it was a wonderful game.

Imagine my interest when I heard of a sequel in the offing — well I wasn't disappointed, Heart of Africa is every bit as good as Seven Cities, but, with a much easier gameplay and no messing about creating continents.

The game is once again exploration, but this time you have the whole of the African continent at your disposal. Apparently, Hiram Primm, eccentric millionaire and amateur explorer, was convinced of the existence of the Lost Tomb of Pharaoh Ahnk, and that it was hidden somewhere within darkest Africa. He spent many years travelling around, talking to native chiefs and risking life and limb in order to piece together the evidence of the secret hiding place.

He left a will which stated in the event of his demise his lawyers should find a worthy successor who could carry on his lifes work. The reward would be to inherit his fortune and all his companies. That person is you, and in the manual provided are some useful clues, like Primm's Diary, his unpublished account of the legend of the Pharoah, his will, and a rather strange letter he sent to a junior partner in the legal firm, who promptly went off and tried to find the Tomb himself.

You start off in Cairo and using the joystick, you move your man around the landscape which scrolls smoothly along as you go. When a city or village is reached, you move into a close up representation of the



area which shows the various huts and shops in the town. Here you buy supplies and try to find information. Most of the deals are done by bearing gifts, so stock up plenty before you go. Food is obviously a pre-requisite, and running out leaves you in a decidedly dodgy, in fact a pretty terminal, situation!

There are rivers to navigate (a canoe is useful here, but awkward to carry on land) mountains to climb and waterfalls to discover (Livingstone Falls for one). It is in fact an immense area and is incidentally geographically correct, in every way.

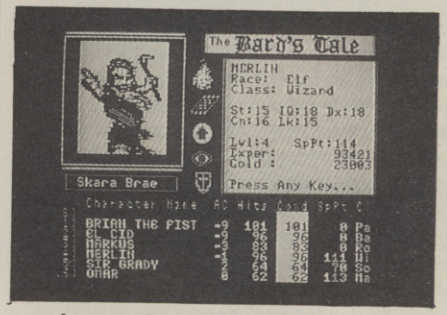
As you discover places you are rewarded by the company wiring extra funds for you to use and for me, discovering the source of the Niger uncovered a very useful cache of goodies, which impressed a native chief no end. So much so, he said I could always take supplies from his village completely free. He then proceeded to give me a valuable clue. I haven't found the tomb yet, but believe me, I'm still trying. It's that sort of game. In fact, if you do manage to win, you can always try again as each time you start over the location of the tomb and all the valuables change.

You can of course save your position on disc, (up to 10 different game situations). Great graphics, great sound — great everything! *Don't miss this one.*

The Bard's Tale
C. 64/128 Ariolasoft £14.99

Long ago (when knights were bold and damsels even bolder) when magic still prevailed, the evil wizard Mangar the Dark threatened a small but harmonious country town called Skara Brae. Evil creatures soon heard the good news and joined his shadowy domain. Mangar then froze all the surrounding lands with an 'Eternal Winter' spell, totally isolating Skara Brae from any help and disposed of the little towns' militia.

The future of Skara Brae hung in the balance, who was to resist? Only a handful of unproven young



warriors and magic users, a couple of Bards with sore throats and some out of work rogues.

You are there as leader of this motley group of freedom fighters, whose perilous existence is in your very hands. For this is the stuff of legends and so the story begins.....

This is the inlay background to a new release from Ariolasoft which heralds their 'Tales of the Unknown'

CONTINUED...

venture!

series and is an out and out dungeons and dragons role playing game with a few additions thrown in. 'Bards Tale' is written by Interplay who have been responsible for some excellent graphic adventures such as 'Mind Shadow' and 'Tass Times in Tonetown' and this release bears all their hallmarks, both in sound and vision.

You start in the Adventurers Guild, where you can either create your own six member party or begin play with the characters that already exist on the disc. This party contains a healthy mix of races and classes and will certainly do to start with, although to actually win the game and destroy Mangar you'll need to develop this lot into a pretty powerful team by raising their experience levels and magical ability through countless battles with the various n'er do wells that frequent the town.

All the usual D & D ground rules apply here with the characters all having different hit points and armour classes, not to mention the multitude of spells available for magic users (which incidentally all have to be learnt). This game is all about exploring the town and finding where the various shops and inns are and of course the entrances to the many dungeons and mazes that abound. Along with the package is a map of Skara Brae which will give you some bearings. However, there are a couple of walled off towers I've spotted, hmm, I wonder how you get in those? Although, (as in most games of this type) there is a lot to learn before you can really get down to a bit of orc bashing, Skara Brae has a lovely atmospheric feel to it and doesn't make you hurry your decisions. It just waits patiently for you to move, but, if you hang around in the streets you'll just get attacked time and time again especially after dark. So if you want to ponder, move into a house, or return to the Guild at nightfall.

There are some neat touches, I like the graphics of the party members, especially the wizards which twirl their hands at you as if casting a spell — very nicely done.

Obvious comparisons will be made to Ultima IV and Phantasie, but The Bards Tale competes quite favourably with these, both in cost and game play. Role playing is catching on and if you are only the slightest bit interested go and get one and try it.

Try this one — I liked it a lot.

The Archers by Mosaic

Let me say first off that I am not a fan of the original Archers radio show and after seeing this game I certainly will never be!

The inlay instructions say that you are in charge of The Archers show, so how would you change life in Ambridge? Well, personally I'd get Walter Gabriel to make a bomb and blow them all to kingdom come, which would put us all out of our misery!

MIND FOREVER VENTURING...

You may think I am being a little too harsh on this game but quite honestly, why should people have to pay for something which is practically a clone of Adrian Mole? It's not an adventure in the true sense of the word, as the only thing you have to do is press 1-3 in answer to a given scenario situation. The adventure part, I suppose, comes in the way that your answers decide on the route the story takes.

You are a trainee scriptwriter on The Archers programme, and must make plot decisions for four of the major characters — Jack Woolley, Eddie Grundy, Elizabeth Archer and Nelson Gabriel. When the first of the four parts are loaded you see the beginnings of a plot for Jack Woolley, the owner of Grey Gables Country Club. The story unfolds before you and every so often you will be faced with an editorial decision (the 1-3 mentioned earlier). Once a decision has been chosen the story continues. The aim is to keep up the audience figures and hope for a record number of listeners. Mmmmmm. Throughout

the game, the latest audience ratings are shown to give you a guideline on your progress along with a memo from the controller as to his feelings. If you're losing listners, you get some pretty nasty feedback resulting in the sack! If you manage to increase by one million, then the second character is allowed to load with the obvious necessity to increase to another million if you want to get into part 3 and so on.

I got thoroughly bored by it all and in fact had to answer the same set of questions three times in a row in one case. Pretty poor show that and definitely not what Level 9 are capable of.

I suppose this game could appeal to a younger audience, but quite honestly if you've got Adrian Mole, don't bother with it, and wait for Mosaics foray into the horse-racing world with an adventure from a novel by Dick Francis. That should be worth waiting for.

Hints

Adventure Help

Deadline — Infocom

Stuck for a clue in the study? Take a close look at the writing pad, on the next page is an imprint from the writers pen.

Wishbringer —Infocom

Can't get past the dog the first time? Give him a bone from the cemetry. Can't get past him the second time? Find out his name from the note and call him.

The Hobbit — Melbourne House

Having trouble with the Butler? Hide in the barrel and wait for him to throw you into the river.

Mindshadow — Activision

Don't know why you're in the club? Check your hat, you might find a note inside!

The Very Big Care Adventure — St. Brides/CRL

Is the bull blocking your path? Lie to him, 'cos he's a gullybull!

That's all the space I have this month, I hope you had an enjoyable Christmas and don't forget to write in — I am very interested to know if you agree with my reviews and comments. 'Cos, if you don't, say so and we'll have an interesting discussion.

Next month, I'll have some tips on solving ULTIMA IV for you, plus all that's new in adventuring. See you then.

Adventure!

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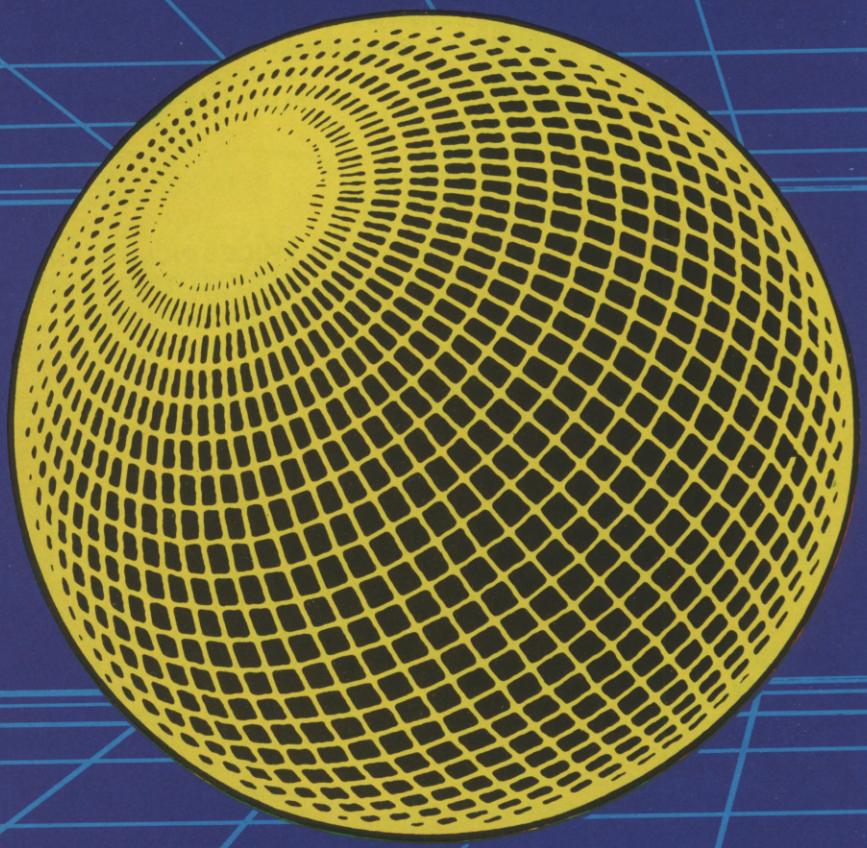

In recent years, computer technology has evolved to meet the specific needs of the computer graphics industry. Technological developments are occuring at all levels, with applications ranging from pure business to medical, industrial design, architecture, entertainment and advertising and many other creative fields.

An unprecedented range of computer graphics for commercial environments moved in to Wembley Conference Centre. State-of-the-art systems, software and peripherals for CAD/CAM, business graphics and computer animation all made up the Computer Graphics 86 Show at the end of the year.

Now in its sixth successful year the complete event comprised a conference, seminars, the Computer Animation Film Festival, and an industry exhibition covering graphics displays, plotters, turnkey systems, 2D and 3D 'solid' modellers, intelligent terminals, digitisers, tesselators, workstations and applications systems.

There were special seminar topics including:
Computer Graphics Technology:
Video Graphics Technology:
Business & Information Graphics:
Small CAD Systems:
Hard Copy Output:
Computer Animation:

CCI was impressed by the number of exciting developments on show and are happy to be able to publish some of the fascinating results produced by companies at the leading edge of computer graphics.

1. Title Sequences for Channel 4 TV and Airshow International created by English Markell Pockett Design.
2. Picture produced with the 'Design Paint' package: IO Research.
3. High-res Graphics: Cubicomp.
4. Special technique used for cleaning,averaging and solarising: IO Research/Pluto.
5. Frame grabbed from Video: IO Research.

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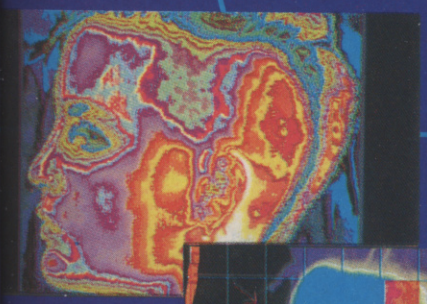

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Dolphin-Dos

Dolphin Dos works for the 64 and 128. It won C.C.I's Oskar as the best utility of the year. Peter Richardson tells you why.

The speed of the Commodore 1541 Disc Drive is a standing joke among owners of other computers. Those of us who own one have long had to put up with jibes about tortoises and cassette loaders being faster than discs. We held our peace. and suffered silently but when it came to serious business use, with programmes like Superbase, we had to admit to ourselves that the critics had a point. Sorting and batch-processing fairly large lists was better done by leaving the machine to it and going for lunch. So when I first saw a prototype parallel connection for the drive being demonstrated at the Commodore Show before the last, I sat up and took notice. When I saw it on sale as 'Dolphin Dos' at the recent show I thought seriously about buying one, and after a friend had bought and enthused over it on his C-64 I decided that the time had come to invest in one for my C-128.

Installing one is a task not to be taken lightly, because it involves fitting new ROMs in both the 128 and the 1541, which must be done with care, and in any case invalidates the warranties. So I began with some trepidation on the 128. The neat little booklet that came with it gave full and clear instructions for the 64 and the 64 section of the 128, but they hadn't got round to a new booklet describing the extra 128 ROM chip which enables you to use the 128 in 128 mode. On ringing Evesham Micros I found that this involved only one extra replacement chip in socket number 35, so I thought I could cope. After opening up the 128 the job was very easy, because you have simply to carefully prise out two chips and gently locate and press in the two replacements supplied. Then if you really feel like burning your boats, you find a place for the tiny enabling switch and drill a small hole in the case to accommodate it. You may just leave it hanging out the back.

Much encouraged by the ease of the operation I opened up the 1541. This time there are two larger chips to remove, and a fair sized circuit board to plug in their place. The two chips are then replaced on the circuit board and finally a place has to be drilled for the enabling switch. This can be left dangling outside the case but a much neater job is made if you drill a hole. I found that it fitted very neatly on the left front of the drive, just above the mains indicator light. A flat ribbon connector to the user-port is led out of the back or side of the case and this completes the job. I refitted the drive cover with a sigh of relief. I am not renowned for delicate workmanship but I can't say I found the job difficult.

But how good is it? Well though I've had only a short time to experiment with it I must say I wouldn't like to part with it. This is what Commodore should have produced in the first place. Up to now I haven't found anything that it won't load far faster than before. Some games disks load in an unbelievable short time. Boulderdash, admittedly a fairly short program, loaded in under 3 seconds. I can't be more accurate because I couldn't work my stopwatch any faster while pressing RETURN.!! Programmes with their own special loaders etc. may be proportionately slower, but compared even to the normal cartridges, or software turbo-loaders, they load very fast indeed. I found to my relief that some of the imported American discs which have to be loaded at normal (zzzzzzzzzzz) speed because the American turbo loader won't work on British drives, responded to Dolphin DOS. For example 'Silent Service' a favourite of mine, takes an eternity to load normally, which is why I don't play as often as I might. With Dolphin DOS it was up and running in less than 50 seconds, which allows for subsequent part loads. Its normal time is well over 5 minutes. Solo Flight II went in under 35 seconds. Most games went in in under 15 seconds. The odd one which was slower than this because of special loaders, etc., when converted with Freeze-Frame to normal-load disc files, went in equally quickly.

It works with superbase and Superscript. Practicalc and Print Shop, and the improved performance is very noticeable. I had got used to waiting for long documents to load and the speed of access is a pleasant surprise. Batching and sorting is much quicker too. Because of the time taken for the computer to do calculations while batch-processing data files from the disk, and the time needed for the disc operating system to locate files before loading and saving them, it is more difficult to time the improvement, but my impression is that there is at least a three-fold improvement.

Speed of loading and saving is probably enough reason for buying Dolphin DOS, but there are other noteworthy features of the packages. SHIFT and RUN/STOP loads and runs the first programme on the disk. Load "Name" and Save "Name" replace the clumsier Load "Name", 8,1 etc. To format a disc takes under 20 seconds, and validating and scratching are 6 times faster. A very worthwhile feature is the ability to format a disc with 40 tracks, thus giving more space for data. These discs will naturally only work properly with Dolphin DOS operating — otherwise you get an "Illegal Track or Sector" message. The Function keys may be enabled for disk management commands and are automatically returned to normal use as a programme is loaded. Owners of two drives will find that at 9 changes the Device number of the Drive, while at X9 alters the device which the computer addresses. It is possible to switch Dolphin DOS itself out either wholly or partially. For 64 owners there is a built-in monitor which is adequate, though not a Super-Duper all-Bells-and-Whistlers model.

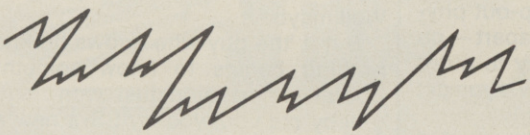
You may have gathered that I like it. That is an understatement! I was worried that once I had installed it I would have tied up my 1541 and might not be able to use it with special turbo-copier discs and so forth, but I would now be very reluctant to part with it.

It costs around £70 for the C-64 and about £10 more if you want the extra chip for the C-128, but I think it is extremely good value for money, and if you use your 64 or 128 in business it could well pay for itself in a very short time.

It undoubtedly revolutionises the 1541, and I found the folks at the other end of the 'phone at Evesham most friendly and helpful when I had a few queries. All we want now is a kit for installing a second head on the 1541 and the 1571 is dead. On second thoughts, couldn't Evesham Micros design us a new ROM for the 1571 to cure the troubles it is having while trying to work the second side?

P.R.

Your key to communications!



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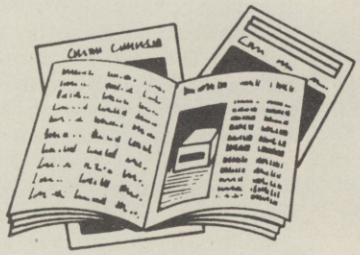

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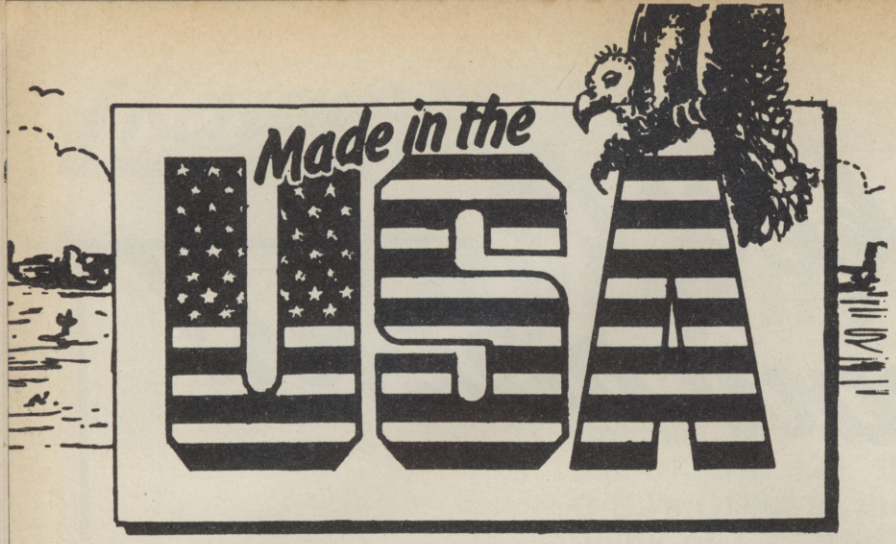


How many times did they tell you the 64 was dead as yesterday's news? How often has Frank Sinatra retired? There's hell of a lot of life in the old dog yet. The 64, I mean. Commodore's long-in-the-tooth baby is still getting the total business from the geniuses that come up with the ideas, that create the packages, that manufacture the add-ons, that plug into the slots, that zing out on the screen of the box that CBM built. And thensome!

You on the health-kick? Plug in Bodyline... into the cartridge slot of your 64 (or 128). It gives you sensors that record internal signals from your body — No, I'm not asking you which part you put it up against, hairy hands! — and you can watch the result on your monitor or TV screen. I hear the latest turn-on is to use it with a friend... a close friend.

How close a friend? Say one you wrestle with. If you don't have one that close, try fast rising Mindscape's Bop N' Wrestle which puts you in the ring with some really wacky characters. It's a game for the fast on the feet. On the other hand, for fast back-up there is 'The Solution'. It backs up disks in 21 seconds flat for $39.99. How much *that* costs a second, Skull and Crossbones Flyer?

You can learn to add up, binary-style, by reading a best selling smash series from TIME/Life 'Understanding Computers'. Each book is a near-miracle of the kind of simple but generously illustrated computer knowledge that even a beanbrain like me can cotton onto. But if I'm lacking the buzzing grey stuff, maybe your Commodore wasn't born with much of the old intelligetmesomequickyoudummy. Or so CompuServe would have us believe. Their slogan says 'Use the Brains You Commodore wasn't born with'. Hey, sometimes I think my trusty 64 thinks *i'm* the dumkopf! CompuServe — the biggest infocomms network is putting out a whole raft of Forums. There's the Comms Forum, the Program Forum, the Arts and Games Forum even the AMIGA Forum. There's a Forum message board and a Forum Conference... I know geezers who don't believe life exists outside the networks. Reality? It's just a state a mind... Maybe the 51st.

Brain or Mind? Soul or Body? Peel away the secrets. You can do it, kid, with CBS 'The Body in Focus' $39.95 a throw for 64 or 128. It's a computerized model of that keep-in-shape or ship-out physique of your. You can take it apart — on screen, baby, only — and try to put it back together again. Hey, how'd you get that extra kidney over there?

W/P? Dead and gone will the 64? That's about the size of it, I don't think! New things there are there too. Digital Solutions is making the running with the excellent value $39.95, top selling Pocket Writer, Fleet System 2 from PSi comes on at $69.95 with a 90,000 built in spell checker and I hear Paperclip is bringing out a new edition with a whole Webster's Theasurus. Yowee! Think I'll beddybues and let the WP's write Made in USA. Tell me when you've finished 64! Hey and mail it too, will ya, kids?

And, my dear British gentlemen, how about Made in the UK? That hot little tweetie-pie UK's very own Firebird is burning up the nesting screens with some torchy releases. Tracker and The Pawn are really getting the Kudos here as top of the class quality. Firebird have plugged into the learning circuit too with Talking Teacher. Aimed at preschoolers, it has built-in speech synthesis to help tutor kiddos in the letters of the alphabet. It makes it all as easy Aybeezee. Even when the brat has got that sunk in, you can still flaunt your supierority by beating him at the latest Trivia game. The ask-me-another playthings had begun to dull their sparkle but Cynus has brought out Quizam! Which they claim is 'a trivia game where the computer isn't trivial'. As one whose trivia option was at fade out, I've got to admit Quizan! impressed even me. It's got not only evaluation, record keeping, a board display and music but also up to 7 players at a time on any of eight different game boards at eight levels of difficulty! OK, smartness, who did what to whom and why? The answer is... Quizam! And *you* turn into a super genius. Well maybe...

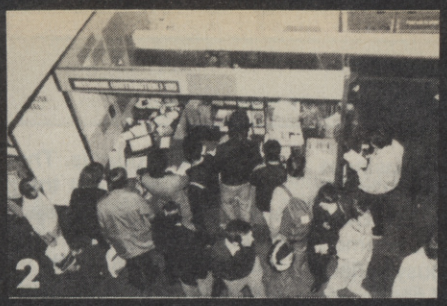
Carmen plugs into Bodylink

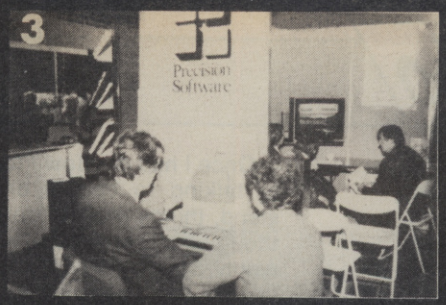
But if 'the guy who knows he knows nothing begins to know something' Socratic dimension just won't satisfy greedy old you, you try SSI's new hotshot sims releases... 'Shard of Spring' is a multi-character role-player that promises 'adventure unbound by the mundane constraints of reality' Hey that sounds like my Saturday nights with Carmen. Did I tell you about this Mexican chick... Well 'Shard' is set in a world where magic overrides the law of physics. That just sounds like my Carmen... Anyway you have to rescue the wondrous Shard — the giver of eternal springtime... Olé,.. Carmencita.

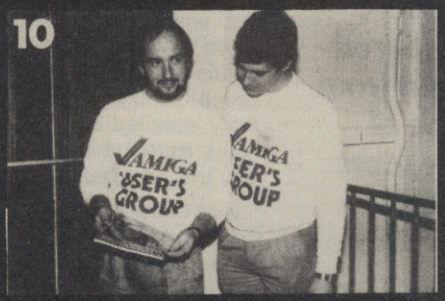
SSI's other goodie is Road War 2000. You get to break a new set of rules — No, not those, Carmen! The laws of driving. You've got to battle mutaints, cannibals andrival road gangs... that's just the usual way Carmen thinks she has to drive the freeway...

'The Today is Thursday so let's release the 4th game this week' syndrome seem to have really grabbed Electronic Arts, who are really threatening to be the all-out leader of US computer entertainment. They just tossed — I kid you not 9, not 10, but *11* brand spanking new game itothe screen of my 64 (I call it 'Tonto'! No, that's not *you* Carmen!) Solve a murder, relean your identity with 'Amnesia', Wanna freeway firefight (another?) try 'Autoduel' (remember the great Spielberg thriller?). Take command of WWII in 'Battlefront'. Try the world of magic with Möbins (Twist that and shout!). Cybernise a tank in 'Orge'. Turn on, tune in, and boot up with 'Dr Tim'. O'Leary's 'Mind Mirror' (put down that cube of sugar!). Struggle through 100 levels of dungeons with 'Ultimate Wizard' or spell it out in the 'Arch Maze's Tale'. Hey wanna 'Murder Party'? How about a computer/board tryout with 'Scavenger'. Or settle down to check out or checkmate their great 'Chessmate 2000'. All on the lameduck 64... If the 64's dead I'm Charley's Aunt and my Chilli con Carmen didn't come from Mexico but was Made in the USA. Hey, put down that 38 pistola mi amor please don't point it at my 64! Adios,

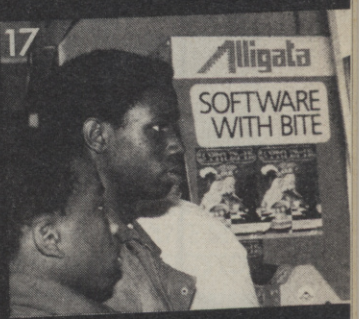
Joe Gene Parris







The 9th International Commodore Computer Show



Around 15,000 people were at the Novotel for the third Commodore Show this year. A few of the notable scenes... as the well known paparazzi, Rob Moss saw them.

1. *Saturday at the show — Playday!*
2. *Meedmore from the top*
3. *Business and pleasure — Precision's Double*
4. *First Analytical operate GEOS*
5. *Hitting the right notes at CCI Softpost*
6. & 7. *Getting The Best at CCI's stand*
8. *Sweet Syndromic Music*
9. *30p worth at Timeworks*
10. *AMIGA Users read the best*
11. *Tynesoft's Plus/4 draws more*
12. *Programmer of the Year Udo (Winter Events) Gerz with Anco's Anil Gupta*
13. *Diving in at Supersoft*
14. *Superior's Repton 3 draws 4*
15. *Colleen's weighty team takes the CCI Music Oskar*
16. *Orders from an Outer Space banana*
17. *Alligata Bites Back!*

Inside Info

ICPUG is a highly influential organisation and brings many benefits to its members across the whole range of Commodore activity. CCI considered that a regular column from ICPUG would be of interest to many readers. The views expressed by ICPUG may not be those of CCI

Arriving at the Novotel on the morning of Friday November 21, I was a little concerned that this particular Commodore show might turn out to be a bit of a disaster.

Once I had got down to the business of talking to people on the ICPUG stand, things started looking up. Even though the show as a whole seemed empty, our stand was always busy, reflecting the ever-present need of people for information and advice on their computer. I would like to thank all those of you who came and spoke to me, mentioning this column — it is nice to know that someone is reading this — and also those who communicated with us on the stand via Compunet. The number of messages that appeared on screen like "Gosh are there people watching this" was innumerable.

Was there anything fantastic at the show? Not really, although one package impressed me while I was helping out with security on Commodore's stand, was 'Defender of the Realm' by Mindscape. This is a new concept game called 'Cinemaware', and featured amazingly detailed animated graphics. The name I presume was derived from the way the view keeps changing scene.

One of the better aspects of doing the Commodore show is the 'question and answer sessions' that we hold daily.

For the Saturday afternoon session, we were able to welcome Chris Kaday, the General Manager of Commodore U.K. to the stand. Predictably, maybe, he did come under some criticism for Cmmodore's pricing policy, and he wouldn't be drawn into commenting on any future products. There were, however two significant things that he did say. The first thing was that he would endeavour to get the new ROMs out for the .128 and 1571. (If you are having problems with data corruption on the second side of your disks, then please write to Chris at Commodore's Maidenhead address). The second was that he would try to get ICPUG involved in the alpha and beta testing of new products, and was seeking for a closer working relationship between the two organisations, and for ICPUG to create a more 'professional (i.e. commercial) image'.

Product testing is a good idea, since it gives the U.K. consumer more say in how the product finally turns out. Plus there are enough knowlegeable people in ICPUG to be able to give well reasoned and constructive comments on the product. Concerning the closer relationship, we were already providing Commodore with stand security at the show, and answering technical questions on all sorts of Commodore equipment. It is probably true that we as a group know more about Commodore products than Commodore themselves. At this stage, though, we are not a commercial organisation, and so we are not able or prepared to become Commodore's technical support division. But in the realms where cooperation is possible, here's to a closer working relationship with those we love to hate.

T.W.A.

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If you are seriously interested in using or programming any Commodore computer, then joining ICPUG is a must!

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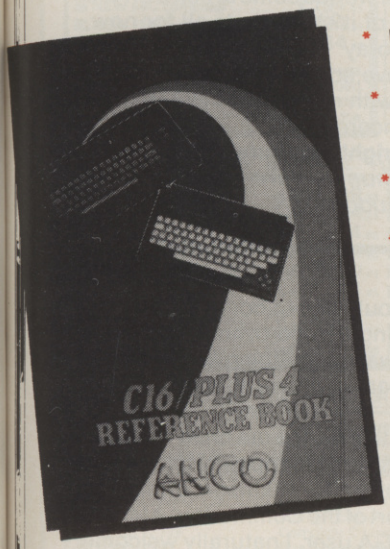

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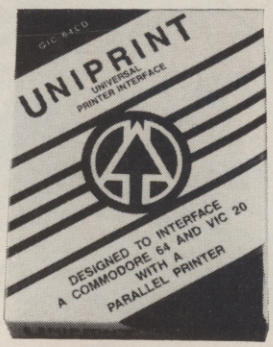

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This low-cost serial port to Centronics parallel printer interface is just what you need to interface your Commodore 64 to an Epson, Canon, Star Gemini, BMC, Panasonic, Smith-Corona, Okidata etc. or to a daisy-wheel such as Juki, Star Micronics, Qume, Diablo, Brother, Silver-Reed, etc. Uniprint addresses your printer's special features, including dot-addressible graphics. It converts Commodore ascii to standard ascii, emulates Commodore 1525, and has a fully transparent mode.

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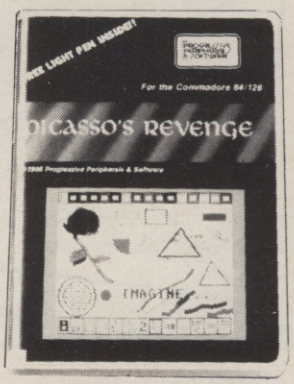

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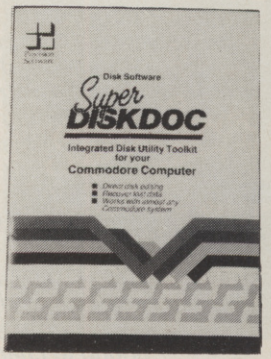

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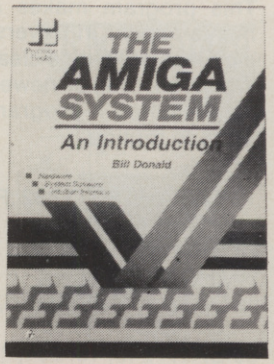

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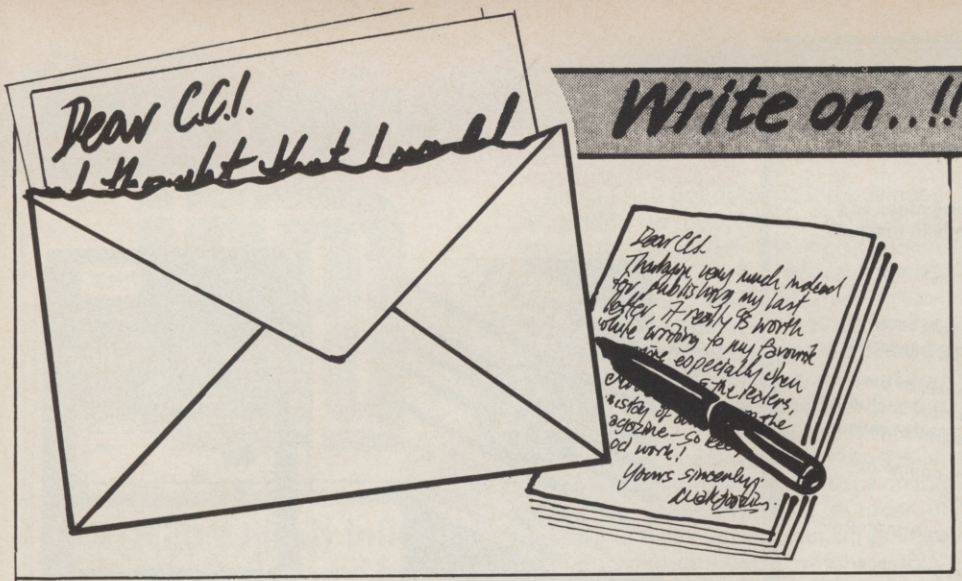


Dear C.C.I.,
I note that in the December issue you have now published the names of the winners of your competitions in the July issue. I am naturally disappointed not to have won the BLINKER, but I accept that my efforts were not thought by you to be good enough. I would, of course, like many of your readers no doubt, be very interested to see the standard of the winning entry from Sean Kane. As it is no more than ten lines long, could you perhaps find room to publish it in a future issue?
E.B. Clarke, Cornwall.

Happy to oblige!

This program makes all REM statements appear in Reverse — thus making areas of listings clearer.
When run it can be newed and when you have entered a program, SY5 828 will execute routine.

```
10 FOR A=828 TO 882 :READ X :B=B+X
   :POKE A,X :NEXT
20 READ C :IF B <> C THEN END
30 DATA 165, 44
40 DATA 133, 89, 169, 5, 133, 88, 160, 0,
   177, 88
50 DATA 240, 19, 201, 143, 240, 8, 230,
   88, 208, 242, 230, 89
60 DATA 208, 238, 200, 169, 18, 145, 88,
   208
70 DATA 241, 200, 177, 88, 200, 17, 88,
   240
80 DATA 13, 24, 169, 5, 101, 88, 133, 88
90 DATA 144, 214, 230, 89, 176, 210, 96
100 DATA 7494
```

Dear CCI,
Do yourself a favour, cut the games reviews by half, stop shoving the Amiga down our throats (yes we would all love one, but most of us will never afford one), drop those lousy cartoons, that irritating Felix, and most of all that hairy hippy (I never liked his programs, and why does he want us all to buy Ataris?) and get back to being the magazine I knew and have loved for five long years (pauses to take a breath, yes that was a long sentence). Please, please, please see the error of your ways. Because I will stick with you for a few more issues, but if I do not see articles on programming, listings, tips, tests of hardware and serious program reviews I will have to change my magazine.

I would like to see CCI as a magazine for people who program and / or do useful things with their computers rather than as a 'Games Players Comic'.

Oh, and please stop slagging off other magazines it only pulls you down to their childish level.

I hope you take this in the spirit in which it is written. I would like to know what your other readers think.
S.Studdart. North Wales.
PS I have just been offered a pound to a penny that you will not publish my letter.
Wow, Stephen! Do you actually read CCI? If you do you will find that there are just as many of the articles or programming etc as there ever was. There are just more of the things you don't like (but others do!) as well. As for the AMIGA, our bet is that 68000 machines are what everybody — maybe even stick-in-the-mud you — will be using in a couple of years. You might as well stop resisting the future. Just lie back, you might enjoy it... (send the pound to charity!)

Dear CCI,
I'm a computer programmer by nature and I take it seriously, although I admit a good 'blast' now and again does pump the old adrenalin into the system!! Over the past few months I've watched your magazine very carefully and noticed the tremendous improvement you have made. Now you cater for everone's needs and not just game players (like *some* magazines I could name).

No longer visible are millions of game reviews about every game under the sun, but a good balanced magazine, plenty of interesting articles and reviews which is just right, also now with lots of colour and a neat binding with the date etc, along the spine so its easy to locate on my shelves.

Keep up the good work on all fronts —don't slip and become another boring magazine like most of the rest. I have a C128 and appreciate the coverage of it — when will we see some articles on the CP/M side of it? Well thats all for now, except hooray for Commodore who seem to have sorted themselves out — especially with regards to the AMIGA!!!
Yours sincerely,
Thomas Wright, Banbury, Oxon
Thanks Thomas (are you listening Stephen Studdart?)

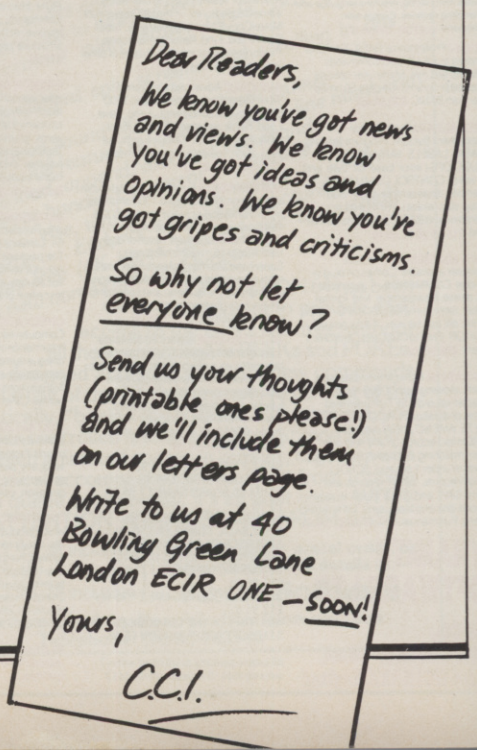
Dear CCI,
Firstly I should like to congratulate you on producing a good overall magazine. There is always something for everyone, from the games player to the business user.

Anyway this brings me on to my main point. I was very disappointed to read a letter from Mr R. Atkinson criticising your support of the Commodore AMIGA. As an AMIGA user, I naturally welcome your positive attitude towards this marvellous machine, but I would be interested to read about it even if I were not an owner. To expand on this point, I do not own a C16 or a Plus 4, but I am always interested to read about them, and I realise that the owners of the machines will naturally wish to see them represented.

So come on Mr Atkinson. Just because you don't own/can't afford* a CBM AMIGA don't decry the machine or those that support it; you don't know what you are missing!

Yours sincerely
C.R. Elsden, Attleborough. Norfolk.
P.S.* Unlikely if he's **THE** R. Atkinson (Man Utd!!!)

Well... as he's recently been sacked, as manager, perhaps he CAN'T afford one.



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VizaWrite Classic 128 is a much enhanced successor to the best-selling VizaWrite 64, which **THE TIMES** featured in three articles, calling it 'a creative writer's dream!' **VizaWrite Classic** is certainly the **best** wordprocessor we've yet seen on **any** computer, ever! Written specially for the 128, **VizaWrite Classic** makes maximum use of the speed, memory and 80-column display, showing your document **exactly as it will be printed...** with a **30,000** word disk dictionary, massive **55K text area**, proportional **printer support** plus **built-in NLQ fonts** for CBM/Epson type printers, easy-to-use **'pull-down'** menus, **full function** calculator, **'newspaper style'** columns, **mail merge...** and much, much more!

VizaWrite 'Classic' 128	~~99.95~~	£79.95	VizaStar 128	~~129.95~~	£99.95
VizaWrite 64 'Professional'	~~59.95~~	£39.95	VizaStar 64 XL8	~~99.95~~	£79.95
VizaWrite 64 (cartridge)	~~89.95~~	£69.95	VizaStar 64 XL4	~~79.95~~	£69.95

VIZASTAR 128

The information processor... spreadsheet, database and graphics: the **most powerful** integrated system yet for the Commodore 128! The latest design techniques provide the ultimate in **ease-of-use** with all the sophistication of a fully **integrated** product... **VizaStar's** advanced spreadsheet includes **high speed** maths formulae, date functions, lookup tables, enormous **60K worksheet** (1000 by 64), programmability, windows, cell protection, **fast** search and sort, text editing, wordprocessor merge, variable column widths... **PLUS** a built-in database with **split-second** access, up to **8K** record size, **9** screens per record, unlimited file size, **16** files per database, full support for data exporting, reporting and selection... **PLUS** displayed or printed **hi-res graphics**, automatically scaled, with 2 & 3-D bar graphs, colour pie charts... and much more!

UNBEATABLE SUPERBASE & SUPERSCRIPT BARGAINS!

SuperBase 128	~~99.95~~	£57.95	SuperBase 64 & Plus/4	~~79.95~~	£37.95
SuperScript 128	~~89.95~~	£64.95	SuperScript 64	~~69.95~~	£47.95
SuperBase: The Book		£11.95	SuperBase Starter 64	~~39.95~~	£19.95

HACK-PACK 128

The ultimate utility pack for your 128... a full Programmer's Toolkit (FIND, DUMP, CHANGE, MERGE, etc.) **plus Amiga-style RAM-DISK for using disk data at memory speeds, plus program compressor! £39.95**

Oxford PASCAL 128

A full J&W Pascal compiler with both interactive mode (90K user area) & disk compiler mode (120K)... graphics & sound extensions... and both stand-alone and modular run-time options! ~~49.95~~ **£44.95**

PetSpeed 128

The heavy-duty compiler... accepts all Basic 128 instructions... uses the whole 128 memory... accepts user-written Basic extensions... and compiled programs can run up to 40 times faster! ~~49.95~~ **£44.95**

GEOS 64

With **DeskTop**, organizer and file manager, **GeoPaint**, a powerful graphics editor, **GeoWrite**, graphics-based word-processor, **DiskTurbo**, fast file loader, **plus** alarm clock, calculator, notepad, photo & text manager and many fonts... **£49.95**

SOFTWARE BARGAINS FOR YOUR COMMODORE 64!

SuperType 64	Professional touch-typing keyboard trainer	~~25.95~~	£15.95
SuperType 64 (tape)	Touch-typing trainer as above, on tape	~~19.95~~	14.95
Simon's Basic 64	Programmer's cartridge from Commodore	~~50.00~~	35.00
PetSpeed 64	The standard 64 Basic compiler from Oxford	~~34.95~~	19.95
Oxford Pascal 64	The complete J & W Pascal for your 64	~~49.95~~	34.95
Oxford Pascal 64 (tape)	Pascal for 64 tape users	~~22.95~~	19.95
Print Shop 64	Desk-top publishing for your Commodore 64!	~~44.95~~	39.95

IF YOU WANT IT TOMORROW... CALL US TODAY! ON 01-546-7256

Prices are POST FREE & include VAT. Order by phone with your credit card, or send cheque/PO or your credit card number. Official orders welcome. We despatch same day by FIRST CLASS post. If our lines are busy, why not try our 24-hour recorded order service, on **01-541-5185.** Ref. A45

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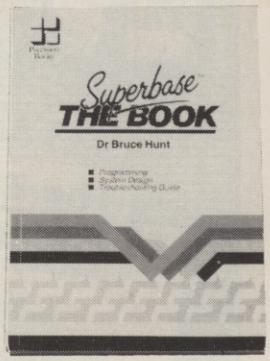
TOP QUALITY PRODUCTIVITY SOFTWARE FROM Precision Software

Superbase

Superbase is the most powerful Database System ever developed for 8 bit computers. Why? Because not only can you access its commands from menus but you can string them together with BASIC commands to form your own complete programs. Superbase can import data from and export to other programs via sequential files. In addition the C-128 version will load together with the Superscript word processor to create a completely integrated office system.

Commodore 64 disk NOW ONLY **£49.95!**

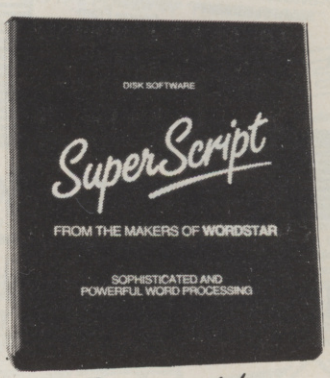
Commodore 128 disk NOW ONLY **£69.95!**



Superbase THE BOOK

Superbase is recognised as the leading database system for Commodore computers, with more than 100,000 users of 10 national language versions worldwide. Now Dr Bruce Hunt has produced the first in-depth guide to using the Superbase system, from first steps through to advanced programming techniques. The wealth of hints, tips and practical examples makes Superbase: The Book required reading for anyone working or contemplating working with Superbase.

194 pages **£11.95**

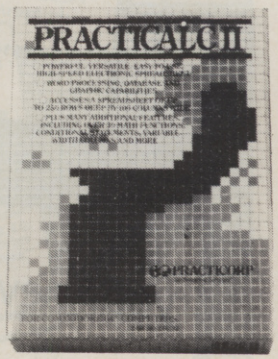


Superscript

Superscript gives you everything you need for professional word processing in one easy-to-use package. Its menu command structure puts you immediately at ease, with no complicated commands to memorise, yet Superscript combines business-style editing, spell checking, calculator, row and column arithmetic and full mail merge facilities. The phrase glossary feature enables you to store whole passages of text, or command sequences and recall them with a single key.

Commodore 64 disk **£49.95**

Commodore 128 disk **£79.95**



PRACTICALC II

PractiCalc II combines a fast, easy-to-learn spreadsheet with database and word processing functions all in one powerful program. Set the width of each column individually on a spreadsheet up to 100 columns wide by 250 rows deep. With PractiCalc II you can sort information numerically or alphabetically, and carry out searches through columns or rows. Using its built-in word processing you can prepare impressive financial reports and documents with the utmost ease.

Commodore 64, disk NOW ONLY **£39.95**

Available from your local dealer or directly from Precision Software on

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Evesham Micros

ALWAYS A STEP AHEAD

The EVESHAM Enhancer 2000

The Evesham Micros version of this reliable and compact disc drive has a **new ROM** to ensure a **very high** degree of compatibility with disc turbos and protection schemes.

FEATURES

- ☆ HANDLES DISC TURBOS
- ☆ DIRECT DRIVE MOTOR
- ☆ NO OVERHEATING
- ☆ VERY RELIABLE
- ☆ 1 YEAR GUARANTEE
- ☆ COMPACT SIZE
- ☆ HIGHLY COMPATIBLE
- ☆ VERY QUIET

IMPORTANT:
ONLY THE EVESHAM MICROS VERSION OF THIS DRIVE HAS THE NEW ROM THAT WILL HANDLE DISC TURBOS AND LOAD OVER 98% OF PROTECTION SCHEMES.

THREE PURCHASE OPTIONS

OPTION 1	OPTION 2	OPTION 3
Evesham Enhancer with free s/ware.	Evesham Enhancer with free s/ware and Quickdisc + cartridge.	Evesham Enhancer with free s/ware, Freeze Frame cartridge and 10 discs.
ONLY £149.95	**ONLY £159.95**	**ONLY £179.95**

YOU WON'T BELIEVE YOUR EYES

DOLPHIN DOS
THE EFFECT IS STAGGERING.

Now established as **THE parallel operating system** for the 1541 disc drive. Hundreds of satisfied users include business, hobby and full-time programmers **including the Gremlin Graphics team.** The speed and efficiency is truly unbelievable, it is compatible with **the vast majority of commercial software,** speeding up both the loading of the program **and of SEQ/REL files.** (It is brilliant with Superbase, Easyscript, etc.) For non-compatible programs it can be **completely switched out.** It DOES NOT use a special disc format and your existing discs will be compatible.

FITTING

Fitting involves the insertion of two sub assembly circuit boards, one in the 1541 and one in the '64/'128. These normally just plug in but on some '64s a small amount of soldering is necessary.

SOME OF THE FEATURES

- ★ 25x FASTER LOADING (PRG FILES)
- ★ 12x FASTER SAVING (PRG FILES)
- ★ 10x FASTER LOADING (SEQ FILES)
- ★ 8x FASTER SAVING (SEQ FILES)
- ★ 3x FASTER LOAD/SAVE (REL FILES)
- ★ E.G. LOAD 202 BLOCKS IN 5 SECS
- ★ EASY AND FAST DOS COMMANDS
- ★ USE 40 TRACKS FOR 749 BLOCKS
- ★ MONITOR BUILT IN
- ★ DRIVES CENTRONICS PRINTER
- ★ ENHANCED SCREEN EDITOR
- ★ EXTRA BASIC COMMANDS

(These figures do not allow for searching)

ONLY £69.95

Available for CBM 64 or '128 in '64 mode, please specify.

EXTRAS AVAILABLE . . .

Kernal for '128 in '128 mode	**£9.95**
User port expansion card (3 slot)	**£14.95**
Dolphin Copy (Whole disc in 18 secs and lightning fast file copier)	**£7.95**
Dolphin main board for second drive c/w lead	**£44.95**

If you require further information please send SAE for fact sheet

STOP PRESS

Dolphin DOS wins C.C.I. Oscar for best utility of 1986. First ever 100% hardware rating in Compunet review. Many more software houses now using D. DOS include: Superior, Alligata, Adventure International, Thalamus, and Domark.

Quickdisc+
FAST LOAD PLUS UTILITY CARTRIDGE

After enjoying considerable success since its release we have now made some improvements to "QUICKDISC+" to maintain its position as the best value in the disc "speed up/utility" cartridges.

Fast LOAD (now 5-7 times normal speed). Works with majority of protected software. Can be switched in and out from the keyboard.

Fast SAVE at 7 times normal speed.

Fast Format takes just 20 seconds.

Fast Backup copies an entire disc in four minutes (not protected software).

Very Fast File Copier for selective file copying at HIGH speed. Now handles files up to **248 blocks** long.

Improved DOS commands (DOS 5.1) makes for easy use of the disc drive. eg. $(RETURN) will LOAD and display a directory without overwriting BASIC. SHIFT RUN/STOP will LOAD "0:*",8,1 etc. **Very, very useful.**

Incorporates Centronics printer software (user port) **with CBM graphics** capability (requires user port centronics cable).

A RESET switch is fitted. (We have found this to be "unstoppable", it even preserves the tape buffer).

NO MEMORY IS USED by this cartridge, it is totally "transparent" and uses special switching techniques.

"128" and 1570 compatible in '64 mode.

PLUS MANY MORE USEFUL FEATURES TO MAKE YOUR 1541 FAR MORE FRIENDLY TO OPERATE.

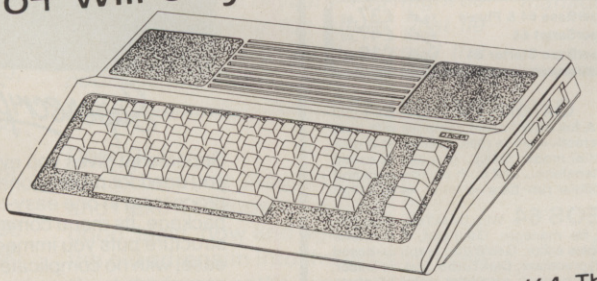
ONLY £19.95

NOW EVEN FASTER

LOOK!

your new look '64 will only cost you **£19.95**

THE LO-LINE '64



This new stylish case with it's modern sleek style will transform your '64. The high quality injection moulding is beautifully finished and very sleek. The lower key height also makes operating the computer much more comfortable.

It is very easy to transfer your '64 into this new case creating the feel of a new computer.

In Australia contact: **MICRO ACCESSORIES of S.A.,** Unit 8 Hewittson Rd, Elizabeth West, S. Australia 5113. Tel: (08) 287-0191

FREEZE FRAME UTILITIES DISC V1.0

Now the first support disc to enhance even more the powers of "Freeze Frame". Included on this disc are many routines to enable the complete transfer to disc of more programs that load extra parts. It is used in conjunction with "Freeze Frame" Mk III and means that virtually all programs of this type can now be handled.

The program will be regularly updated when new programs of this type appear. Other useful utilities will be addded as necessary. Owners will be able to update their disc for £2.00.

ONLY £7.95

NUMBER ONE FOR POWER . . .
NUMBER ONE FOR EASE OF USE

NEW MK. IIIB VERSION

FREEZE FRAME

NOW HANDLES PROGRAMS THAT LOAD SUBSEQUENT PARTS

The world's most powerful backup product? We are sure that "Freeze Frame" is the most powerful and the easiest to use product of it's kind. The originator and still the best. Now the **"MK. IIIB" version** has moved "Freeze Frame" well ahead of the "opposition". As well as it's unfailing skill in handling **every memory resident program** available for testing up to 1st December1986 it will now transfer from tape to disc the majority of **programs that load subsequent parts** (e.g. Winter Games, Silent Service, etc.).

FEATURES

- TAPE TO DISC
- DISC TO DISC
- COMPLETE SELF-CONTAINED, NO EXTRA SOFTWARE NEEDED
- FILES COMPRESSED FOR ECONOMY OF STORAGE SPACE
- 128/128D COMPATIBLE IN 64 MODE
- TAPE TO TAPE
- DISC TO TAPE
- RELOAD INDEPENDENT OF THE CARTRIDGE
- NOW HANDLES PROGRAMS THAT LOAD EXTRA PARTS
- PROGRAMS RESTART FROM THE POINT BUTTON IS PRESSED

SUPERB SELECTIVE FILE COPIER BUILT IN, WILL LOAD AND SAVE FILES UP TO 248 BLOCKS LONG AT HIGH SPEED

OPERATING "FREEZE FRAME"

"Freeze Frame" is **simplicity itself** to use. Just plug it in the cartridge port, switch on and select required option from the menu. You can then load and run software totally as normal. The latest version of "Freeze Frame" will, to the best of our knowledge, allow **ANY software** to load and run normally (unlike some competitive products).

"Freeze Frame" can be brought into operation at any convenient point by **pressing the button** on it. You can then do one of three things:–

1. **Pressing "D" will save a working version of the program in memory to a formatted disc. This version will include an auto booting very high speed reload (many programs reload in less than 30 secs).**
2. **Pressing "S" will save a completely standard version to disc, ideal for use with your fast load cartridge or system. Use with "Dolphin DOS" to load any program in 10–15 seconds. Also compatible with non CBM drives and U.S. spec. computers.**
3. **Pressing "T" will save a working version of the program in memory to tape. This incorporates a high speed reload at approx. 2400 baud.**

IT'S AS SIMPLE AS THAT

ALL PROGRAMS SAVED WITH "FREEZE FRAME" CAN BE RELOADED INDEPENDENTLY OF THE CARTRIDGE

ONLY £39.95

Owners of earlier versions can return them and upgrade for £14.95

SERIOUS WARNING: THIS IS AN EXTREMELY POWERFUL PRODUCT AND IS STRICTLY FOR PERSONAL USE. DON'T COMPARE IT WITH ANY OTHER PRODUCT, NOTHING ELSE OFFERS THE POWER OF "FREEZE FRAME".

SELECTED PRODUCTS

STAR NL10C. The best Commodore ready printer, full range of print styles, friction/tractor feed and interchangeable interface cartridges. If you change your computer just get a new interface.
ONLY £259.00

1541C DRIVE. The latest version of the 1541, better drive mechanism and new colour.
ONLY £189.95

DISC NOTCHER. Double the capacity of your discs with this handy gadget. Cut second write protect notch accurately and easily.
ONLY £6.95

AZIMATE 3000. Handy package allows you to easily check and realign the tape head of your CBM data recorder. Includes screwdriver.
ONLY £6.95

MOTHERBOARD. 4 slot with either all upright sockets or 3 upright and 1 through socket to suit modem, please specify.
ONLY £28.00

POWER PACK. High quality replacement power pack for CBM 64.
ONLY £24.95

XETEC SUPERGRAPHIX. The best Centronics printer interface for your 64/128. Large buffer, downloadable fonts, etc.
ONLY £69.00

NEOS MOUSE. The best mouse for the 64/128 with "CHEESE" graphics software on tape and disc.
ONLY £42.95

DATA RECORDER. CBM compatible, same performance as the C2N/1531 but cheaper and includes a pause button.
ONLY £29.95

3M DISKETTES

Top quality at low prices, per box of ten:

	Cardboard pack		Plastic pack
SS/DD	£11.95	SS/DD	£12.95
DS/DD	£13.95	DS/DD	£14.95

Disc-Disector

DISC DISECTOR V5.0

Now the **FIFTH generation** of the countries **leading** disc back-up/utility package is available. This latest version includes **many more "PARAMETERS"** to handle the latest highly protected discs. This includes the latest **American and English software.** Be warned if you want to back up software by Ocean, Gremlin, Hewson, Domark and even U.S. Gold, whose protection schemes are NOT always the same as the American versions, then you **MUST have "D.D.".** At press date, **we are sure NO other advertised product will handle all these, be it American or German.**

INCLUDES THE FOLLOWING

"EVESHAM 3 MINUTE NIBBLER" is the **latest version** of the infamous "Evesham Nibbler" now boasting **even more power and speed. Copies highly protected discs in 3–4 minutes.** Handles **the latest types of disc protection completely automatically.** This often involves the use of the **"PARAMETERS",** these add the vital secret code that the highly protected programs check for. (This is the important difference that makes this the best.) At the time of going to press this program copied **virtually all the English and American programs available for testing,** including the latest in games and business software.

"DUAL DRIVE NIBBLER" allows the use of two drives to make **even faster back ups.** Incorporates device number change software so no hardware mods necessary.

"EVESHAM 8 MINUTE NIBBLER" still very powerful and has been improved. Copies a few that the three minute version won't.

Many, many other useful utilities are included on the disc, including: **SELECTIVE MENU MAKER, FAST FORMAT, FAST FILE COPY, NOVATRANS, DISK ORDERLY, DISCMON+, UNSCRATCH, ETC., ETC.**

The whole package is menu driven and has its own fast boot system built in for your convenience. Pays for itself the first day you receive it.

ONLY £29.95

Customers with earlier versions may return them along with a payment of £9.95 to receive V5.0.

Most routines are CBM 128 and 1570/71 compatible in '64 mode.

STOP PRESS!!

Many software houses are now using "Anti-Freeze" in their software. This renders ordinary back-up cartridges useless. We are now shipping "Freeze Frame Mk. 3B" which will deal with these programs. As far as we know other competitive devices will NOT. Most new software will be using this so don't forget if you want results you must buy "Freeze Frame".

Owners of Mk. 3 wanting Mk. 3B can upgrade for £5.00.

DOUBLER

The tape back up "device"

Doubler has been an **enormous success** and continues to sell very well. Why? Because it is the **best product of its type** on the market. Doubler uses a unique method that copies **all types of software** regardless of speed. It consists of **hardware and software**. The software is the key part as unlike other products of its type Doubler creates a **brand new machine copy**. It is very easy to use and very successful. In fact our tests **have proved** that this "device" can achieve **100% success**.
Requires access to two data recorders.

ONLY £12.95

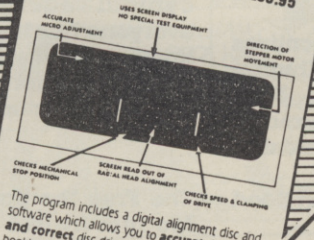
Why settle for less—this is the best.

ALIGNMENT PROBLEMS?

1541 PHYSICAL EXAM

IS YOUR 1541 HEALTHY?
OR WOULD ITS PHYSICAL EXAM LOOK LIKE THIS ONE?

£39.95



The program includes a digital alignment disc and software which allows you to **accurately check and correct** disc drive alignment. The instruction booklet is **very detailed**. Also includes quiet drive stops to **stop** that "hammering" thus preventing further problems.

ONLY £39.95

QUIET DRIVE STOPS

This package incorporates new drive stops for **two 1541s** that will **end for good** the dreaded "woodpecker". The fitting process is very easy and a test program is provided to check the fitment. Helps prevent future alignment problems and makes your drive purr with satisfaction.

ONLY £4.95

ORDERING INFORMATION

ALL GOODS SUBJECT TO AVAILABILITY E&OE
ALL PRICES ARE INCLUSIVE OF VAT AND DELIVERY WITHIN U.K. OR EUROPE. ORDERS OUTSIDE EUROPE ADD £2.00 FOR AIRMAIL.
PAYMENT IN STERLING ONLY PLEASE. PLEASE SEND CHEQUE, POSTAL ORDER, OR CREDIT CARD DETAILS. ACCESS/VISA ORDERS ACCEPTED BY TELEPHONE. WHENEVER POSSIBLE GOODS SENT WORKING DAY AFTER RECEIPT. CALLERS WELCOME.

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TEL: 021 458 4564
TELEX 333294 EMICRO G

Is it a bird? Is it a plane? No, it's SUPER FELIX! You, stop pullg

QUESTION – DO THEY EVER TAKE THEIR CLOTHES OFF IN EASTBOURNE? ANSWER – ASK ANY TEACHER IN EASTBOURNE!

You're Oskaring for it

I've decided to give my own SuperFelix Oskars. I assure you there will be nothing so crass as fairness, honest integrity and all that sort of muck about them. If you want an Oskar, all you have to do is send me about 5 million forints (What the hell is a florint anyway?) and a solid tin Super Felix Oskar is yours. That's the best way, isn't it? Saves time too, none or this messing about with other people's opinions or juries. I don't want those poseur thing's like that 'Game of the Year' rubbish either.

You can choose your own Oskar from the following. I'll give my choice for each but if you send me a big enough bribe I'll throw out the winner and give it to you. Can't say fairer than that, can I? Who says honesty doesn't pay?

The Get Computer Games a Bad Name Award — Friday the 13th — Domark
Longest Awaited Product Award — Knight Rider — Ocean
Most Publicized Non-event Award — Startrek — Beyond
Most Mobile Computer Person — Paul (CBM — Software World — Gemini — Microsoft — Atari) Welch
Most Dubious Achievement of the Year — Herbert Wright on becoming boss of B T.
The Me-Too Award — World Cup — U S Gold
The Enthusiasm Award —Beyond
The Girl Most Likely To Award — Sister Jane Smith
The St Felix of Bordom Award — Sanxions — Thanatos
Hottest Award of the Year — Dante's Inferno — CRL
The Most Incredible Story of the Year — Newsfield Initiative on Piracy
The Princess Krotoa of Mose Award — Paperboy — Elite 'I liked the music and it's easy to play'
The Would You Ever Have Believed It Award — Firebirds, £1 million sales to Germany
The Out to Lunch Award — The German who brought £1 million of games from Firebird
The 'He's in a Meeting Award — David Ward
The Better Late Than Never Award — The fall in the price of the AMIGA
The 'Oh Well 1987 has Got to be Better' Award — Melbourne House, B T, Bill Delaney, Francis Lee, Marc Pierson, Tony Rainbird, John Phillips, Paul Welch, Chris West, Hugh Parnell (Thomas), Ron Smith, Mel Croucher, Greg Ingham, Dave Cahill, Paul Duffy, Bob Hay, Jeremy Rhyll, Eileen Lewis
The Karen from Anco Road Safety Award — Karen from Anco
The Bill Donald 'I caught It In Las Vegas' Award — Bill Donald
The Bill Donald 'I Nearly Caught It In San Franciso' Award — The pilot of the direct flight to Los Angeles
The 48p Stamp Award — Marian Steiner of Sweden
The Electronic Arts Great Future Award — Ariolasoft
The Microprose Simulated Satisfaction Award — U S Gold
The Advertising Executives Making Most Contribution to CCI's Successful Year Award — Peter Chandler and Sarah (Leopardskin Leotard) James
The Really Rude Don't Need To Advertise Award — Disking (Who?)
The Frankie Kafka Lookalike Award — Julian Rosenphone
The Andrew Wright Lookalike Award — Andrew's sisters
The Max the Ad Lookalike Award — Mickey Rourke
The Free the Sprit Pernod Modem Award — Lynne Bennett
The FluffCovered Lollipop Award — Gary Penn
The Best Headline Award — CTW 'Send in the Clones'
The I wasn't Told Award — Ms Sharon Wongflic
The 'Where Were You When We Needed You' Award — Billy Brown
The Shut That Bloody Door Award — Our Sacred Editor
The One More Stupid Award and You're Fired Award — Super Felix
Psst! Anybody want to buy an Oskar?
The Most Fantastic Add-on Award — Alan Sugar — for installing a fan in the Amstrad PC Which doesn't need it (or does it?).

Sir Gray's Little Darling(s)

The universally adored, world-famous magazine designer Sir Graham Bulldog d' Oysterville has told me in confidence that he has swopped his handmade Mulliner coachwork Rolls Royce with an aristocratic cousin for 'a frightfully finer breed of motor' as he puts it. 'I do believe, old boy, that my little darling has been in the family for about a century!' he said 'How much would Sir Graham take for his 'little darling'? Well, according to Sotheby's or somebody, its worth about a million pounds plus. I wouldn't take twice that! After all what's the use of cash these days?'

Sir Grav's Little Darling

We'd like to try out Sir Graham's notorious repulsion for money by offering him a little test. We know all of you CCI readers are millionaires at least so let's take up a collection with a target of say £3 million to buy 'Little Darling'. (donations not less than £100 please) to the St Felix Little Darling Fund c/o CCI. We cynical hacks believe everyone has his price you know, even the fabulously wealthly money-hating Bulldog d'Oystervilles. (You can put up the first hundred thou! Ed). By the way, who are all these pussycats who telephone non-stop occupying the 10,000 lines of CCI Tower? They are the 'harem' of the said Sir Graham (since he became a Muslim he has taken the command 'go forth and multiply' quite literally) Karen, Caroline, Vivian, Janis, Geraldine, and ex-Miss USA called Tuesday, two or three Susans and couple of Gillians and Madelaines all are apparently irresistibly drawn to his suave English gentleman poise and charm? They and many other kittens clog up CCI's switch-board demanding to play games with him (computer of course) when Sir Graham is even rumoured to be visiting. What his good Lady Janet (The Cecile Parkinson of East Anglia) makes of it all, I just cannot even guess, 'Hanky-Panky'? Lady J is reported as saying 'Balderdockdash!' Sir Graham always blows his nose on Kleenex! Anyway he can't play games anymore. He's broken his joystick!, millions of girls might not I believe you but I do Lady J. If you see Sir Graham taking a Little Darling for a ride, don't tell Lady J, will you?

...ullig that paper bag over your head! He knows who you are! And why!

Jo and Jane's Amkneesiup

I have to tell you that I have had billions of telephone calls from furious, hysterical and especially deeply ashamed people about my end of year party. Most of them were begging me to put their names on the guest list. They want me to pretend that they were there. I,of course, refused — as no one offered the going rate of 5 million forints (what the hell is a florint anyway?) However, those two glitzy ravers from Melbourne House, the Hon Jo Meads and Lady Jane Denning, have really blown their cover. Nobody will ever believe their respectable disguise again. Both had such a tremendous time that neither can remember a single thing, not whom they were with, how much they drank or even where they were next morning! All I can say is I will not reveal the amazing truth about the lovely Melbourne House twins unless I am offered at least — well you name the price Jo... How much not to kiss and tell?

The B T Story (Part XIII)

With terrible fear and trepidation I mention, sorry, whisper the name B T... Oh dear Sir Anthony Rainbird has threatened to horsewhip me if I so much mention the words Rainfirebirdbeyondodin, poor Paula Byrne or indeed anyone vaguely connected with B T, including anyone has ever made a telephone call or even been near a telephone. So of course, I won't, except to say Marc Pierson, the fabulously rich heir to the Financial Times/Penguin PiersonLongman fortune, who was Captain Kirk to the ex-Francis Lee's Spock, has departed B.T.'s Beyond Supremoship. M P has beamed himself out of B T to start his own Starship Enterprise software house. Not, we hear, called 'No Connection with B T Ltd'.

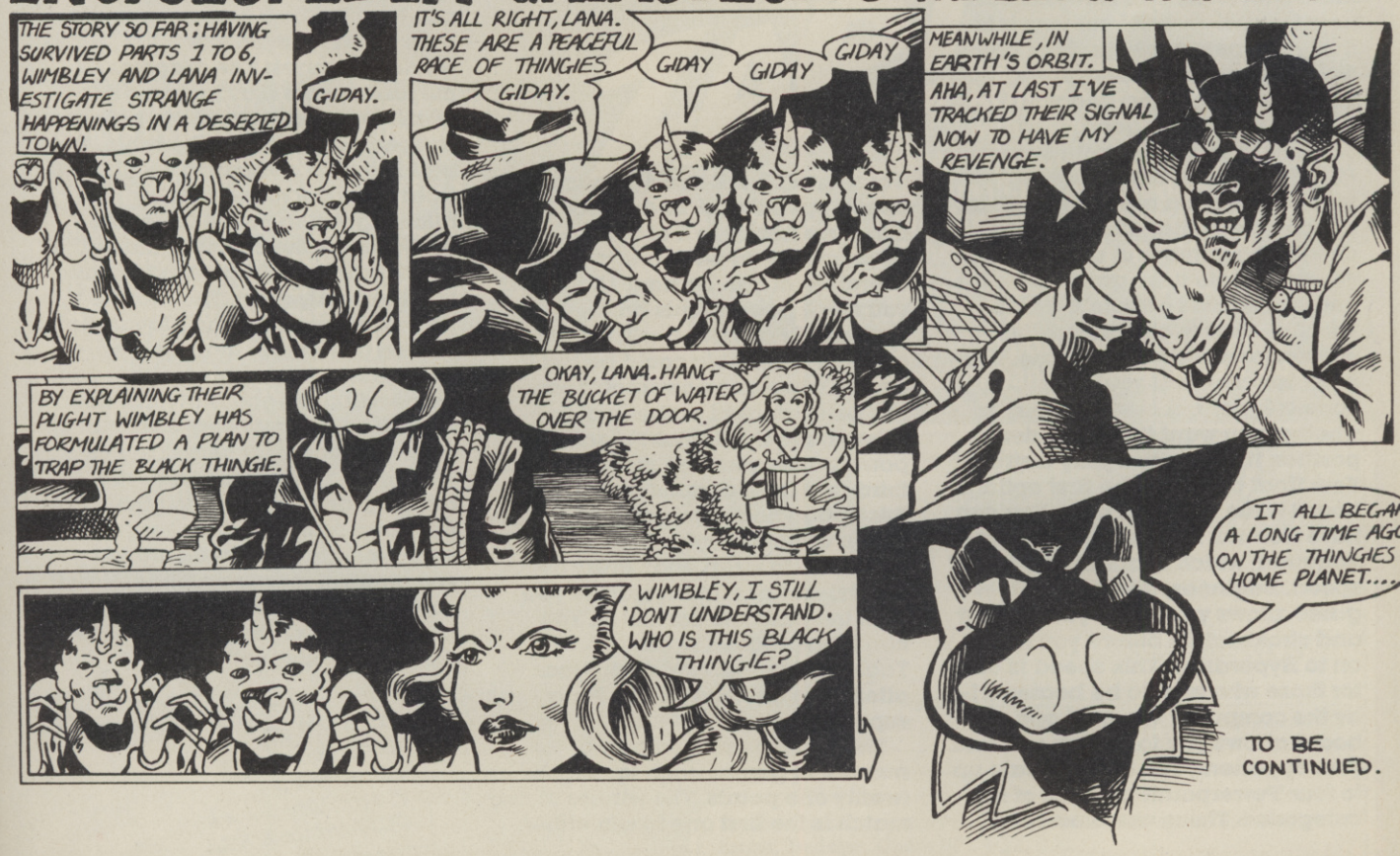
MEOW DO YOU BELIEVE ME?

(Of course you do! Would Super Felix tell you a fib?) Francis Lee himself has surfaced, or rather floated airbourne, into space and announced a new software house of his very own called Starlight (geddit?) which by Christmas 1972 will sell

150% of all the games in the known universe. And, if that's not enough, Bill Delany ex-Beyond boss now of Nexus claims B.T. fired him two weeks after he left them. Strange people these telephone operators . . . (If you don't get off this line it's you who'll get fired! Ed) Sorry Sir. Yes Sir!

And Sir Anthony Rainbird (no relation) we are reliably informed has beamed himself over Magnetic Scrolls — the creators of Rainbird's (now no relation) Pawn. The brilliantly-intelligent Anita Sinclair (definitely no relation! Sir Clive), super — sensational adventure goddess who has made Magnetic Scrolls what it is (what is it? Ed) has given Sir Anthony a consultant's armchair in which to sit and think about the software world. She's a really nice girl, isn't she? O.S.E. is still begging the sad (sorry, said) Sir Anthony to occupy my basket but who would you choose to snuggle up to, the gorgeous Anita or a 200 Kilo Editor Warlock (no relation, Pop-Camp Weakly!) Who, me? I never mentioned Firerainbirdbeyondodin, did I, Reader? We've never even heard of B.T. nicht wahr mein Führer? Sh, it wasn't me who told you, was it reader?

ENCYCLOPEDIA GALACTICA 8: THE BLACK THINGIE. PART 1



MEGA REVIEW

CCI Rating **C64**

MEGA

Ping pong

Super Ping Pong — U.S. Gold

Move over Desmond Douglas coz here I come. Smash your way into this great new package from US Gold. If you played Imagine's version of Ping Pong and you thought that it was good, then prepare to go crazy about Superstar Ping Pong. After the surprisingly quick loader you are faced with an option screen that allows you to choose the number of players, how you wish to view the game, from the end of the table or from the side. The side view is automatically chosen for a two player game. You can also choose if you want complete control over your bat or whether you want the computer to position it before you play a stroke. Your final option of the first options board is the speed of play. You can have Normal, for average players or Beginner, which is about my kind of speed. Beginner, as you might guess allows you to get your timing and strokes right before you move on to Hyperdrive. This speed is only for those who wish to be beaten 21-0 by the computer! The next options board allows you to design you and your opponent. You can allocate up to four 'Powerpoints' to each of six categories. These are 'Smashing', 'Forehand', 'Back-hand', 'Reaction Time', 'Speed' and 'Endurance'. You can have from 1 to 4 of your powerpoints on each one and the overall total can be from 12 to 20. If you use 4 powerpoints on a particular category it will be as good as it possibly could be but if you only use one powerpoint you will be downright pathetic at it. After you've fiddled about with the powerpoints you then move onto the third and final options board. On this option board you can select the colour of both players bats, whether you'd like to swap ends every five points, and how many games you wish the match to consist of. You can then proceed to the Table-tennis hall and make your attempt to become a Ping Pong superstar.

The match is played over a number of games each lasting for twenty one points. The winner of the match is the first one to win either one out of one, two out of three, three out of five or four out of seven games. Each game is won by accumulating twenty one points, but the winner must win by two clear points, i.e. if the score gets to 20-20 then the winner must get 22 points.

During the game you can choose your shot via the joystick. For instance pushing the joystick up and pressing Fire will result in a smash. Pulling down and Fire gives backspin and pressing fire alone will give topspin. You can also determine the direction of your shot, of which there are fifteen.

There are some great tunes and spot effects during the game. You can hear the ball bouncing and a little tune is played when the service changes. The graphics of the table make it as large as it possibly could be, and the bats are in good proportion to the table. The ball is a little difficult to see, but US Gold have got round that by allowing you to pause the game and change the colour of the ball. A black ball is probably the best and is quite easily seen. The table is naturally green but the players bats can be any colour that you desire. The back of the inlay says that this game will drive you batty. It's dead right. It will. It gets very frustrating when the computer serves to one side of the table and you're still hanging around over the other side. But apart from that it's a very enjoyable game that should keep you amused for a long while. Now if you'll excuse me I'm going to keep practising and I'm gonna beat that damn computer yet!

Price: £9.99
Graphics ★★★★
Sound ★★★★
Playability ★★★★
CCI Rating: MEGA

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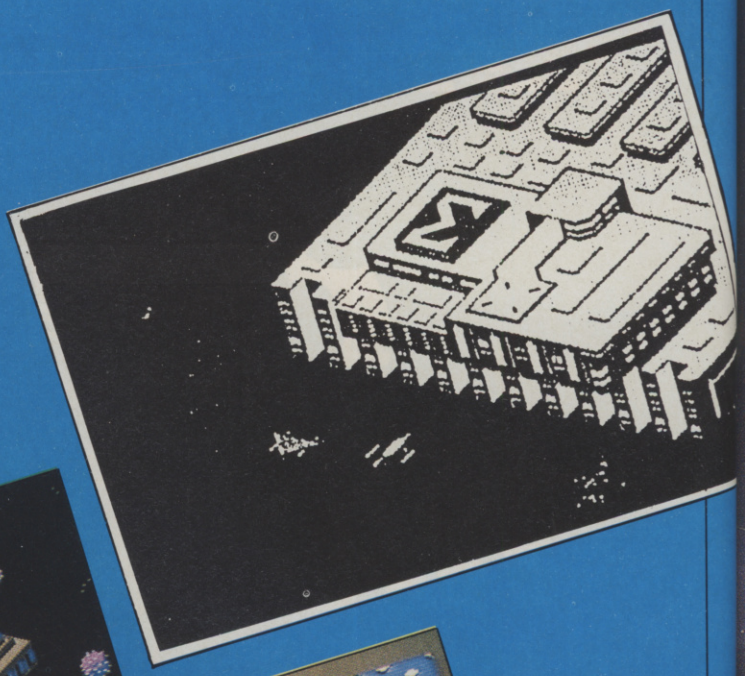
MEGA REVIEW

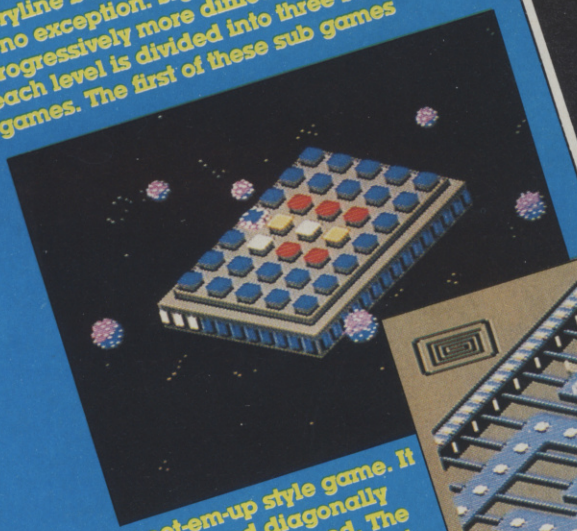
CCI Rating C64

MEGA

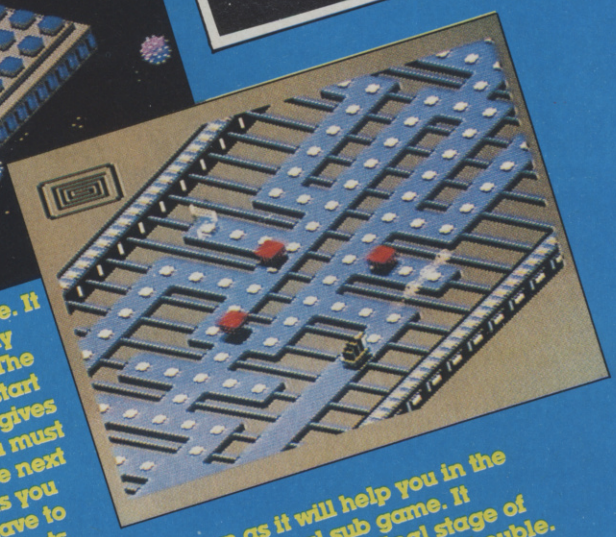
Sigma 7 by Durell

Sigma 7 is the brand new release from the company who brought you the likes of Combat Lynx, Sabateur and Turbo Esprit. All those games have a reasonable complicated storyline behind them and Sigma 7 is no exception. Sigma 7 has seven, progressively more difficult levels, each level is divided into three sub games. The first of these sub games





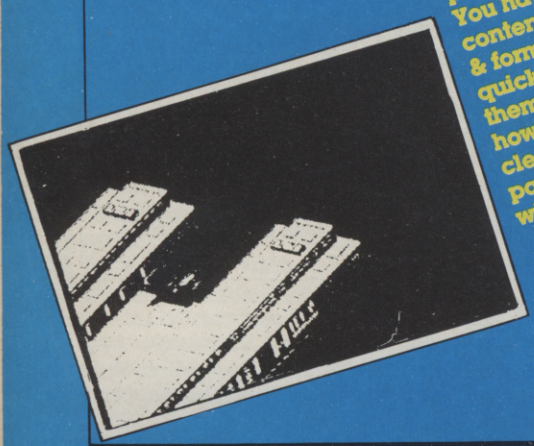
is a great shoot-em-up style game. It is viewed and played diagonally which is very effective indeed. The space station from which you start has some goot shadow which gives it a really good 3D effect. You must fly through space towards the next factory fighting the aliens as you go. The distance that you have to travel between the factories gets greater on each level. Once you've completed the first stage you then move inside the factory. Your task in there is to clear the dots from the pathways, very similar to Pac-man. You have more enemy fighters to contend with this time in the shape & form of robo-mines. They will quickly home in on you if you give them half the chance. These, however, can be destroyed. As you clear the paths there will be a pattern of fixed markers revealed. It will help if you can memorise this



pattern as it will help you in the third and final sub game. It reminds me of the final stage of Danger Mouse in Double Trouble. You must reset a control unit by pressing a group of its buttons in a similar pattern to the one you memorised in the previous stage. You start Sigma 7 with three lives but you get an extra three added when you complete a sub game. So if you finish the shoot 'em up level without getting shot up then you will begin the Pac man level with six lives.

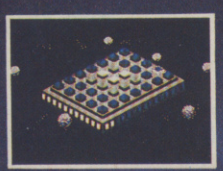
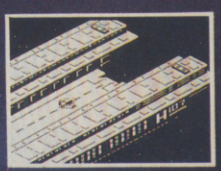
The graphics are very good and the 3D works to good effect. The sound FX are reasonable and all adds up to a very good package from Durell.

Get Sigma 7, you'll love it!



Price: £9.95
Graphics: ★★★★
Sound: ★★
Playability: ★★★
CCI Rating: MEGA

SIGMA 7

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software getting harder . . .

MEGA REVIEW

CCI Rating C64

MEGA

I LIKE IT! ...JOHN ARTHUR

Avenger — Gremlin Graphics

Thou who revelles at way of the Tiger, prepare thyself for yet another deadly encounter with very evil. This time, though, to avenge the death of your step-father Naifshi. The Grand Master of Flame, Yeamon has assassinated your father who brought you up in the way of the Tiger. You have promised to the God Kwon to avenge this act of evil and recover the scrolls of Ketsuin that Yaemon stole after the killing. If you successfully recover the sacred scrolls you will release Kwon from the eternal hell where Yaemon has incarcerated him. Your quest begins outside the Quench Heart Keep. You must find keys to enable you to access the different level of the Keep and thus able to complete the game. Beware though, your keys are limited and doors must be opened in the correct order otherwise you're stuck! To be able to complete the game, not only must you avenge the death and find the scrolls, you must also escape from the keep with both the scrolls and you own life! No easy task. So remember the route you take, or better still try making a map. You have with you a limited supply of shuriken which are like throwing stars, more of which can be found within the keep. Be careful how you use your shuriken, as once it is diminished you only have your own skills to rely on! As in Way Of The Tiger you have 'Inner Force' & 'Endurance' dials. This acts as your lives, which means you have roughly nine. When your Inner Force & Endurance levels get low you can call on the God Know and he will replenish them for you but it is said that he has a short temper and will anger quickly, so don't take to many liberties with *him!* Avenger is completely different from W.O.T.T. which is a good thing.

It is more of a maze game than a Fist type game. You look straight down on the action and the slight three-D effect works very well with walls etc. Avenger is very fast and *doesn't* get boring. You keep wanting to get further and you will learn from your mistakes. This is certainly a just-another-go game. The graphics, although small, are magnificently detailed and colourful. The graphics of the Castle Keep are also great and sensibly coloured. The sound is another redeeming factor. At the title page there plays a great oriental tune, unlike the tunes played in other martial arts games and during the game there are apt sound FX. I liked Avenger more than I did W.O.T.T. and I think this will appeal to a wider range of players than its predecessor. If I were Ocean & US Gold I'd watch out for Gremlin, as their games are getting as good as anything I've seen recently from either of them. This will be another chart topper for Gremlin.

ANOTHER CHART TOPPER FOR GREMLIN!

Price: £9.95
Graphics: ★★★★
Sound: ★★★
Playability: ★★★★
CCI Rating: Mega

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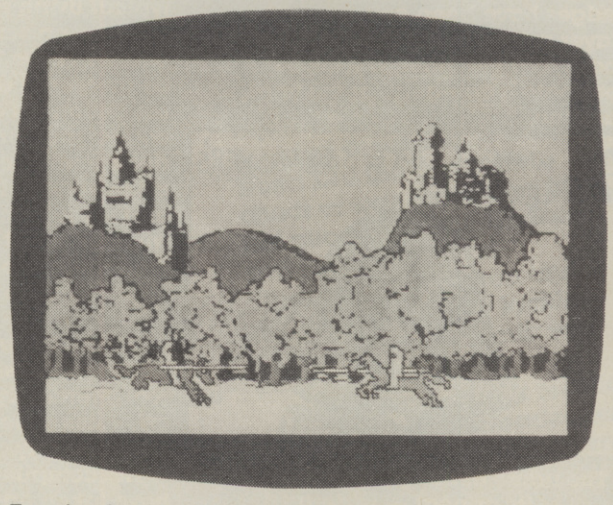

Look at the picture: the game it shows was produced in only one evening! Horses, knights, lances, everything is moving. And everytime a horseshoe touches the ground the sound-chip makes a "tapp" synchronous with the pictures!

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MEGA REVIEW

CCI Rating

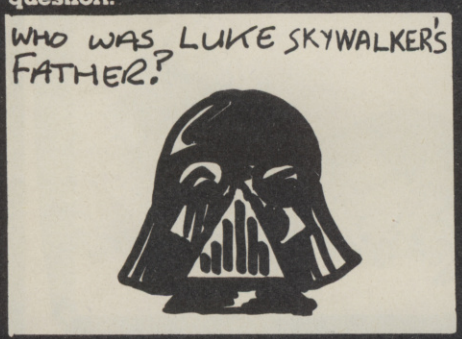
C64

MEGA

TRIVIAL PURSUIT

There can't be many people left who haven't at least heard of the board game Trivial Pursuit. Just in case I'll attempt a brief summary:

Players move a counter around a board of coloured squares by throwing a dice. Depending on the colour of the square on which the counter lands, a question is asked in one of six categories. Get the question right and throw again. Get it wrong and the next player takes over. Correctly answering a question on a "Category Headquarters" square entitles the player to a wedge shaped token of the appropriate colour. When all six wedges have been collected, The player moves to the centre of the board and the other players nominate a category for the final question.



The name of the game — and much of its appeal — is derived from the complete lack of consequence of the questions as well as their variety.

The official computer version of Trivial Pursuit was launched in September 1986. It retains all the features of the board game and then adds a few. If you have a computer and like quizzes this one is an absolute must. Go out and buy it.

The computer game is divided into two screens — a board screen and a "question room" screen. An endearing (or infuriating) little character, known as TP, controls the play. After entering the names of the players, play commences on the board screen. The dice of the board game is replaced by TjP throwing a dart at the numbers 1-6 on the board. Pressing the fire button on a joystick initiates this. Pressing the button again causes the possible landing squares to flash. Move the counter with the joystick and press yet again to decide on the move. TP then marches off scren to reappear on the "question room" screen, a typical living room. The question appears on screen as a speech bubble above TP's head and must be answered aloud before pres-sing the button yet again to reveal the correct answer. The other players decide whether the given answer is close enough to the one revealed and the joystick is used to indicate whether or not it is accepted. Play then returns to the board screen, either with the same player or the next.

During the waiting TP marches up and down or stands and taps his foot. Mercifully, he can be switched off — this speeds up the game considerably.

The compilers of the program have taken advantage of the computer's superiority over the real life scenario by including both pictorial and music questions. They have also included two timers into the package. One indicates the length of time the game has been going on in the form of a grandfather clock in the living room which shimes every quarter hour. The other is an adjustable (5 secs to 9 mins) timer which determines the time limit for answering a question. This is indicated by a canle on the sideboard in the living room which burns down as the seconds tick away before the answer is automatically revealed.

An additional benefit of the computerised version of Trivial Pursuit is the facility to study score sharts. At any time the left arrow key can be pressed to indicate each player's performance in the six categories. This is particularly useful in the letter stages of the game.

Players can join the game at any time, quit (for whatever reason) or just leave temporarily.

The only complaint I could register is that mistakes cannot be rectified. Accidentally telling TP wrongly how a question has been answered can have crucial consequences — particularly towards the end of a game.

A new "computerful" of questions (about 500) can be loaded from an additional tape/disc at any time. I do hope that Domark keep up a steady stream of extra questions — the second tape supplied had ten sets but these could be used up in as many games. Additional sets of questions are promised "soon"

Young Player's Edition

Eight sets of questions — four for 7-12's and four for 12+ — are already available as an addition to the standard game. The supplementary tape/disk cost £7.95. My seven year old son found the questions hard but thoroughly enjoyed the game. His opinion was reflected by two thirteen year old neighbours.

At £14.95 for the tape version or £19.95 for disk Trivial Pursuit is cheaper on computer than it is in the original version.

Graphics ★★★
Sound
Playability ★★★★
Rating: Mega
Price: *£14.95*

On the Gridiron!

From a game that only a short time ago was known just for the strangeness of the padding worn by its mountainous players in the occasional Hollywood film, American Football has leapt to popularity with a huge and growing TV audience. The mysteries of the Gridiron are now gone Blitz, Rush, Split-end, Sack, even 'Refrigerator' are now familiar to mass publiced non-Americans, so it is not surprising that software houses are cashing in on the now millions of fans for whom Sunday is not complete without their dose of highly-organised mayhem! The nearest thing to a small war' someone called it.

Nexus, the thrusting young company controlled by ex-Beyond chief, Bill Delany have brought out the appropriately named 'Super Sunday' and Addictive Games famous for their longest ever in the charts game 'Football Manager' have released 'Headcoach'.

There have, of course, already been previous American Football releases. Ariolasoft's Touchdown, Ocean's Superbowl and MindGame's American Football all had substantial success in their time. But both the new releases seem well in advance of these earlier successes.

Can they be judged head on? Is it a case of 'CCI Superbowl' with Nexus versus Addictive? Should we blow the razzamatazz trumpets and bring on the prancing cheerleaders? No, not really. Not because the games aren't good, but because they are very difficult, almost not comparable at all. 'Super Sunday', as Bill Deleny told us isn't really new. It has been out in the States for sometime, but it is no worse for that.

You have the choice of teams Miami Dolphins, Los Angeles Raiders, Greenbay Packers etc. But is is the game's wide choice of tactics and movement that really make it work. You can select from a list of offensive or defensive plays and long, short flat pass and so on and players (with all their records available to you) and then offensive or defensive moves. Your opponent (there is a two player option) or the computer will oppose you and then you will see an excellent graphic representation of the players and moves you have choosen in action. Super Sunday is a challenging game that, even if you don't already know all the jargon of the game it will soon teach you. It's got a very gripping combination of ideas, explanation, and sheer playability.

In Nexus special football-style pack you will want to grab this one and run with it.

'Headcoach' doesn't aim for the same immediacy but it is equally compulsive once you've got into it. You are 'Headcoach' — the manager of the American football team of your choice. You have four levels of expertise to choose from Novice to Expert. You have a big team but you can exchange players in the 'draft' with other clubs.

Once you've sorted out your team and you'd better make sure you have picked up the strongest going because later on the computer will really test your strengths — then you can put up the graphics. You have a football field on which the two teams are depicted. They are a bit small but the moment they start moving it really is quite exciting. To make the gameplay quicker, the 'downs' have been cut from 4 to 2 and the yardage gains are 5 to 10. When you pick your players, there is a neat screen change that mirrors the organized confusion of real American football. The one complaint we had was when we were leading 6.3, the computer scored a terrifically long field goal to equal the scores and when we tried the same, it didn't work! Did the computer cheat or was our kicker just not good enough? It's the sort of problem that 'Headcoach' sets you and makes you want to tackle again and again until you beat the darn thing.

'Super Sunday' is a terrific blitz of a game. 'Headcoach' will keep you pinned down for weeks. In our opinion, both Nexus 'Super Sunday' and Addictive Software's 'Headcoach' are real winners. They should both be in the collection of anyone who knows what 'Superbowl' means.

JA & ZS

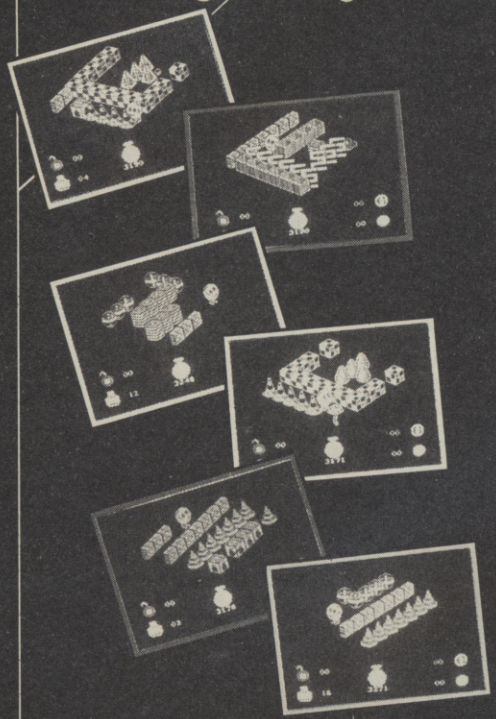
MEGA REVIEW

CCI Rating

C64

CRISP

MOLECULE MAN



by Mastertronic

You are the character of Molecule Man in Mastertronic's crazy new release. Molecule Man is stranded in a massive, complex maze. His time and energy are rapidly running out. It seems a daunting task. You can only escape from this maze via the teleporter, but, first you've got to get it to work by inserting 16 circuits. These circuits are found in the maze, somewhere. You only have a limited life-span but in this world, as you know, money can buy almost anything! When, and if, you find a coin you can use it to buy either an extra life or bombs to destroy parts of the maze that otherwise you could not pass.

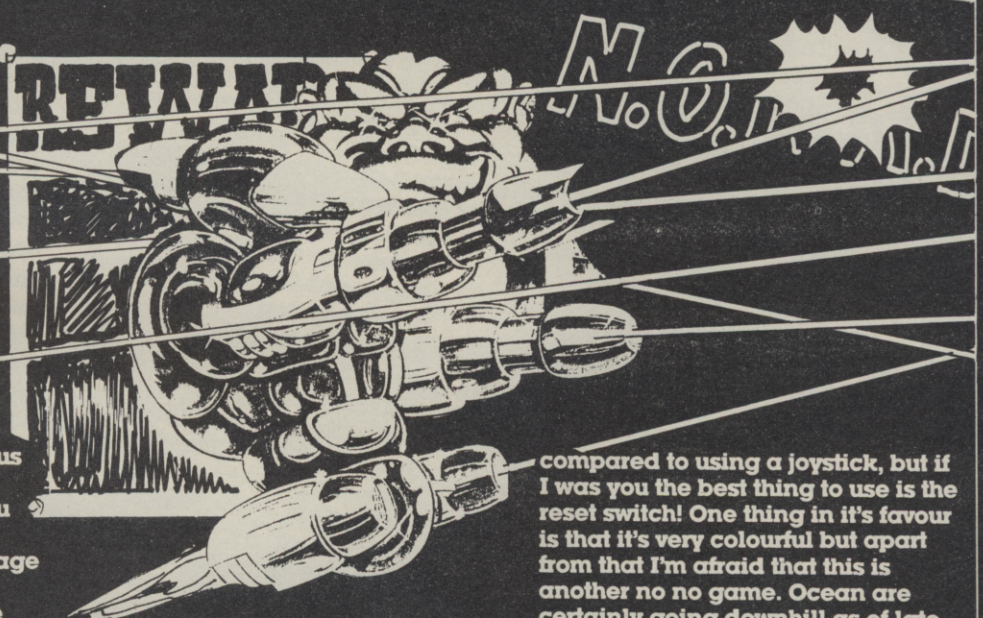
The graphics of Molecule Man are fantastic. They are in 3-d, like those pioneered by Ultimate. The screens are also monochromatic which make them very effective indeed. The movement is smooth although a little slow at times. The direction in which Molecule Man moves is also a little misleading. You've got your normal up, down, left and right keys, but your character moves diagonally. He is a little difficult to control but you will get the hang of it in time. The colour is sensibly used and there are no problems with colour combinations. The sound is mediocre but that will not spoil your fun if you are a maze fan.

Molecule Man also has a built in maze designer so you can make up your own maze to suit your own specifications. You can then make the mazes as hard (or as simple) as you wish. There are a total of 256 screens so its just as well you can save your maze to tape. Molecule Man may appeal to adventure fans and maze fans alike.

Price: £1.99
Graphics: ★ ★ ★ ★
Sound: ★ ★
Playability: ★ ★ ★
CCI Rating: Crisp

C64

NAFF



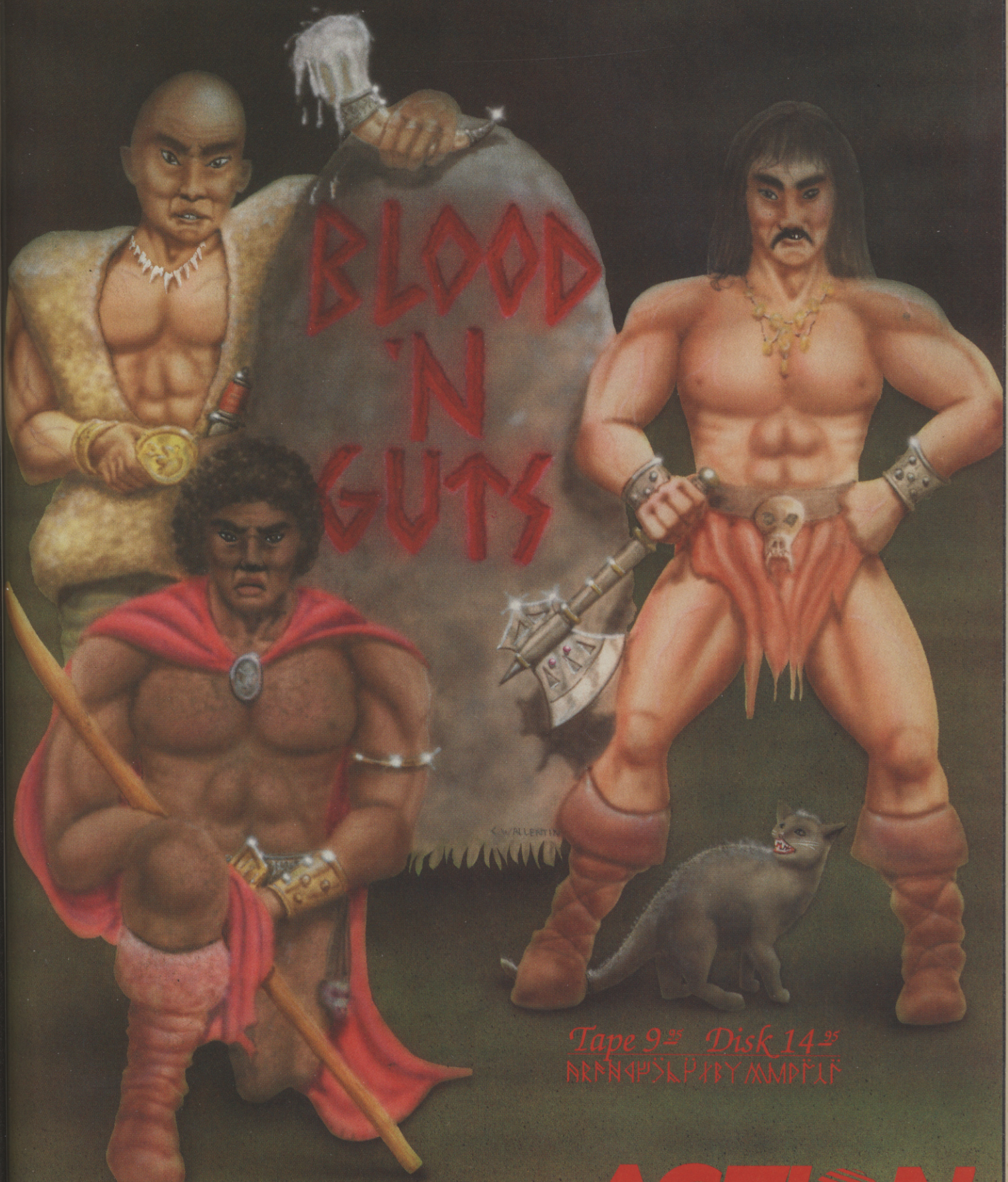
N.O.M.A.D by Ocean

Here we go again on the laborious trail of yet another Ocean late release, and frankly between you and me they shouldn't have bothered. Once again the language used on the inlay card is long, technical and in every language but plain English. Anyway the plot of Nomad goes something like this. An evil character in the nasty form of Cyrus T Gross is spreading his evil far and wide across the universe. He is surely responsible for many arson and gunning attacks on people weaker than himself (Sounds like the Ed!) but no-one has yet proved it. So the rulers of the Free World have got together and agreed that enough is enough. They have called in the powerful Nemesis Organisation and it's just your bad luck to be part of it. So the long and the short of it is that you have to control your Nomad droid, locate ol' Mr. Gross and blast his brains out!

Your Nomad droid is supposed to have a high intelligence factor. Huh! I couldn't even get the thing to move in the right direction. It is a bit easier on the keyboard compared to using a joystick, but if I was you the best thing to use is the reset switch! One thing in it's favour is that it's very colourful but apart from that I'm afraid that this is another no no game. Ocean are certainly going downhill as of late and they are going to have to produce something really spectacular to regain my confidence in them and I'm sorry but Nomad is not that game!

Price: £8.95
Graphics ★★
Sound ★
Playability ★★
CCI Rating: NAFF

Blood 'n Guts – An ancient barbarian decathlon with all the violence and brutality you've ever dreamed about in a computer game...



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American Action software distributed in the U.K. by Microdealer International Telephone (0908) 74000.

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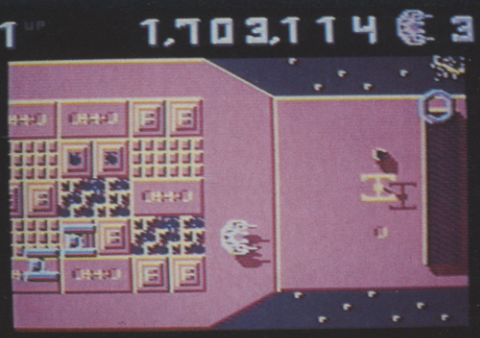
MEGA REVIEW

CCI Rating C64

CRISP

Psycastria by Audiogenic



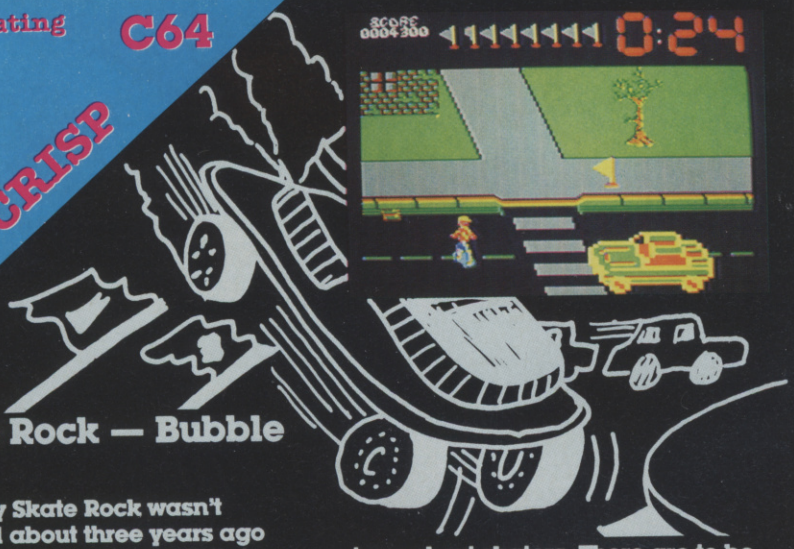
Psycastria by Audiogenic

Psycastrians beware, for I am here. Well actually they've got nothing to fear really, coz I'm not what you might call a space ace, yet! But on to the game. If you've read reviews of Uridium then you needn't read any further. Psycastria is virtually an exact copy of Hewson's mega hit. The Psycastrians have constructed sixteen different, more complex installations. These sixteen installations are split into four groups. Four of them are situated on land, four on giant carriers in the sea, four on the moon and the final four in deep space. Your task is to visit all of these sixteen installations and destroy the ten energy pods that run them. If you destroy all ten within a certain time limit then you will be rewarded with a bonus. After you have completed one wave then you will be warped back to the start so as you can go through the installation again and shoot anything you missed in the first place. You have no fear this time of hitting any high buildings. After every four screens you will take part in another bonus screen where you will be inundated with wave upon wave of alien life. At the end of the game you get a ranking from Novice upwards. The guy who wrote the game also has the highest score (surprise, surprise!) of over 800 million and calls himself GOD in the rankings. I'd call him CHEAT! For those who have never played Uridium then this is a very reasonable copy. The graphics are very good and detailed. They're also very colourful. The movement is imaginative and smooth. There is speech in Psycastria. When you lose a life it says "Tough luck sucker" but it sounds very much like it is swearing at you! Overall one of Audiogenics better games and a pretty decent shoot-em-up for new computer owners.

Price: £8.95
Graphics: ★★★
Sound: ★★
Playability: ★★
CCI Rating: CRISP

CCI Rating C64

CRISP



SAFER AND MORE FUN THAN THE REAL THING!

Skate Rock — Bubble Bus

It's a pity Skate Rock wasn't released about three years ago when skateboarding hit Britain, then maybe it may have sold more, but never mind, I'll try anything once, even skateboardinging on a computer! After months of arguing between the different skateboarding gangs about who is the best, the arguments are now turning to violence and everyone's sticking the boot in. To try and get thing back to normal and restore the peace and friendly rivalry between gangs, a meeting is held. At that meeting it is decided that a competition will be run to find the towns best skaters. There are to be ten different, more taxing courses set up all over town and each skater has to ride them in turn. Each course consists of eight flags, which the skaters must collect and cross the finish line in the alloted time. Those skaters who complete all ten courses successfully will become members of the elite crew 'The Slime Rat Skaters'.

The screen display reminds me very much of the kind Elite used in Paper Boy. The road, cars and houses are in the some kind of 3D. the graphics are a little chunky, especially the cars which are painted a gaudy red & yellow. One very good point is the flags. There are eight of them situated at the top of the screen and when you've collected one they will begin to wave. The control of your board is very difficult and I would've thought that it might have been easier on keys but unfortunately you are unable to use the keyboard. The sound is nothing special during the game but the tune at Game Over is a bit more exciting. I've never found skateboarding very hot and I think I'd prefer to stick a pair of wheels on my 64 Skateboard. But the game is a lot safer and very much more fun!

Price: £8.95
Graphics: ★★
Sound: ★★
Playability: ★★
CCI Rating: Crisp

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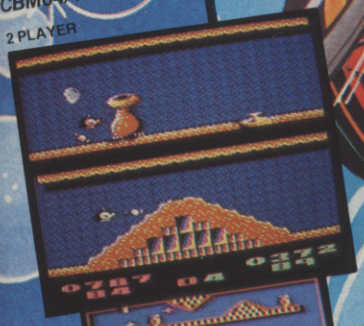
Screenshots from CBM64/128 version

2 PLAYER



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1 PLAYER

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TOP TWENTY

Our Mega-rated Paperboy has made it to the top . . . does this mean Avenger will also be reaching No. 1? Mercenary is still the top C16 game, although Mastertronic games dominate the chart.

C64

	GAME TITLE	COMPANY		Price (£)	Rating
1	Paperboy	Elite	★	9.95	Mega
2	Konami Coin Op	Imagine	★	9.95	T.B.A.
3	World Games	US Gold	★	9.95	Crisp
4	Footballer of the Year	Gremlin	★	9.95	T.B.A.
5	Sky Runner	Cascade	★	9.95	T.B.A.
6	Flash Gordon	Mad Games	★	2.99	Crisp
7	Ace of Aces	US Gold	★	9.99	T.B.A.
8	They Sold a Million 3	Ocean	★	9.95	T.B.A.
9	Avenger	Gremlin	★	9.95	Mega
10	Go for the Gold	Americana	★	2.99	Crisp

C16

1	Mercenary	Novagen	→←	9.95	Mega
2	Bounder Planet Search	Gremlin	★	6.95	T.B.A.
3	Hit Pak	Elite	★	6.95	T.B.A.
4	Scoobie Doo	Elite	★	7.95	T.B.A.
5	Kane	Mastertronics	★	1.99	Iffy
6	Powerball	Mastertronics	★	1.99	Crisp
7	Finders Keepers	Mastertronics	↓	1.99	Crisp
8	Video Meanies	Mastertronics	★	1.99	Iffy
9	Speed King	Mastertronics	↓	1.99	Crisp
10	Pod	Mastertronics	★	1.99	Crisp

★ NEW ENTRY

Compiled by CCI from leading distributors

Competitions

WIN BAZOOKA BILL PRIZES

Someone out there will not only win a copy of Bazooka Bill, but will also play it in style. We're also offering an Army outfit with jacket and trousers. Forty runners up will receive a copy of the game. To enter simply look at the five famous battles below and tell us which is the odd one out and why.

1. Waterloo
2. Trafalgar
3. Ypres
4. Verdun
5. Paschendale

Answers on a postcard to: Bazooka Bill Competition, CCI, 40 Bowling Green Lane London EC1R 0NE.
Closing date: March 15th

WIN SIGNED SCIENCE FICTION BOOKS

We have three signed copies of Brian Aldiss' "Trillion Year Spree", (see review in this issue). This absorbing book entertainingly explores the history of the genre and is a very enjoyable read. To enter this competition, simply tell us who wrote the following:

1.) Brave New World
2.) Dune
3.) Stepford Wives
4.) War of the Worlds
5.) The Fall of the House of Usher

Send your answers on a postcard to: SF competition, CCI, 40 Bowling Green Lane, London EC1R 0NE to reach us by March 15th.

WIN C16 MUSIC MASTER AND C16 GAMES

We have a real treat for one lucky C16 owner! Someone out there is going to win a Supersoft C16 Music Maker, plus a copy of every C16 game reviewed in this issue.

To enter the competition, simply list what, in your opinion were the best C16 games of 1986. The best selection wins the prizes. Please specify if you require a disk or cassette version of Music Master.

Send your list on a postcard to; C16 Competition, CCI, 40 Bowling Green Lane, London EC1R 0NE, Closing date: March 15th.

WIN MELBOURNE HOUSE GOODIES

We have a veritable treasure trove of temptation for you in this competition. The first prize will be a Judge Dredd board game, a Sanyo Walkman and a copy of Kwah. There are also 25 copies of Kwah for the runners up. Simply tell us why these people are notorious.

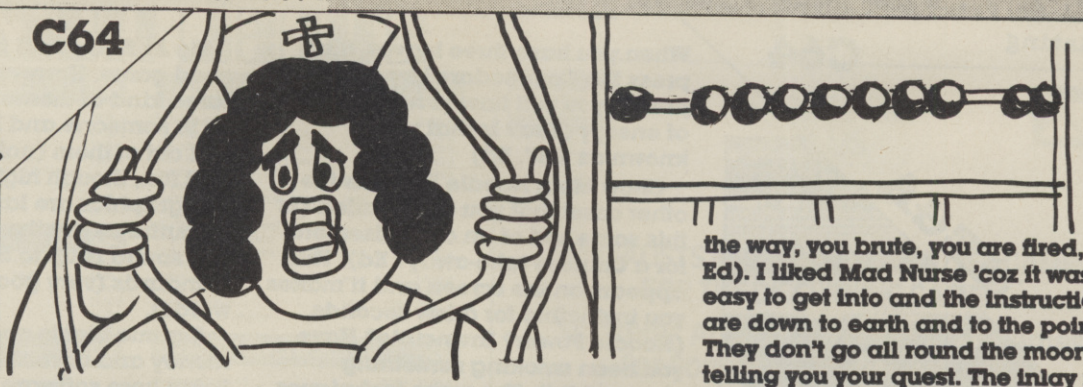
1.Dr. Crippen
2. Ruth Ellis
3. Lucrezia Borgia
4. Ned Kelly
5. Dutch Schulz

Answers on a postcard to: Judge Dredd Competition, CCI, 40 Bowling Green Lane London EC1R 0NE.
Closing Date: 15th March

MEGA REVIEW

CCI Rating C64

CRISP



Mad Nurse — Firebird

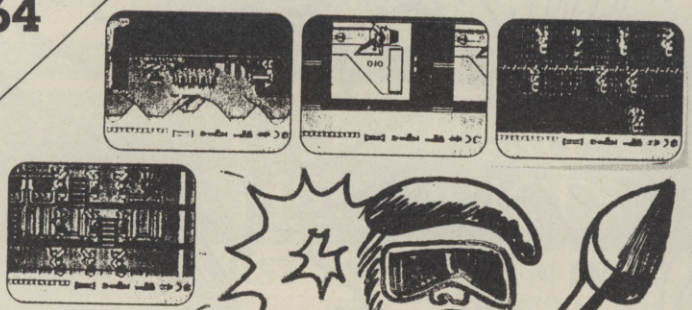
There are no sexy black stockings in Mad Nurse I'm sorry to say (there are male nurses, too! Ed) but this is a decent variant to the age old platform game. Although very simple, Mad Nurse is surprisingly fun to play. In Firebird's latest addition to their Silver range you must guide your trainee nurses around various wards and keep all the little babies safely in their costs. But, believe me some of them can be right little so an' sos. Of course, you know that babies love to explore places that they have never been before and they also love sticking their fingers in small places, like electric sockets. Your job is mainly to keep the babies from sticking their little fingers in dangerous holes, eating pills from discarded pill bottles going near the lift shaft and sticking their heads down the toilet! (I have heard you were exactly like that! Ed).

You start the game with three trainee nurses and they will be fired if they have three mishaps. Your first nurse goes by the name of Brenda Bumwash, the second is Nina Nightnurse and your third and final nurse is Cathy Cuddlecare. The game is played on three levels and a lift connects all levels. One annoying point is occasionally the lift will leave the level that you are on thus leaving you stranded. The only way out is to jump to your death down the elevator shaft! It's quite funny watching a baby fall down the shaft or him getting electrocuted by the plug socket! (By the way, you brute, you are fired, Ed). I liked Mad Nurse 'coz it was easy to get into and the instructions are down to earth and to the point. They don't go all round the moon telling you your quest. The inlay is short and sweet and you have got time to read it before the game loads. The introduction screen is cleverly done and very attractive. I also liked the name-entry phase when you got a high score. High scores are easy to get and a score of fifty thousand plus is not uncommon. Overall a pretty smart game for £1.99. O.K. so it may not be up to the standards of some other platform games I could mention, but I've seen worse ones and they could rip you off by being twice as costly. Worth the cash and more.

Price: £1.99
Graphics: ★★★
Sound: ★★
Playability: ★★★
CCI Rating: Crisp

CCI Rating C64

IFFY



Bazooka Bill by Arcade

Have you ever fancied a trip to Atoll Archipelago. No? Well nor had Bazooka Bill but he didn't have much choice. His boss has despatched Bill to an airbase to try to recapture General MacArthur who is being held prisoner (didn't he say 'I will return' He didn't mention Bazooka Bill! Ed). The General is being held by a group of revolutionaries who have seized control of some island in the South Pacific (It was the Phillipines! Ed). It's all up to you to help Bazooka Bill in the fastest arcade game to arrive on the computer scene.

Bazooka Bill's only weapons are his fists, but as the game goes on knives are found which come in handy to bump off the odd enermy or two. Bill is quite an athletic chap, and he needs to be with all the running up and down ladders that he does. Certain pathways lead around corners (all very confusing). However after 100 of the enemy have been disposed of, you are given an extra life, and boy do you need it! Several movements are made via the joystick such as change weapon, run, climb, up/down, backwards and forwards jumps.

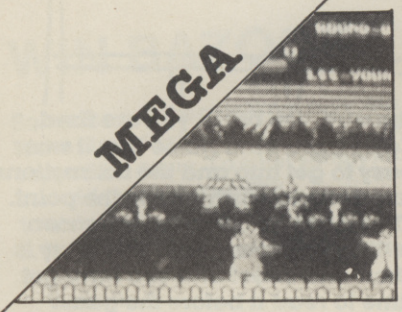
As you don't really know where General MacArthur is you must travel all around the island. This is done by using the plane, but first you must find the airfield (always a good way to start an air trip!)

Bazooka Bill and I didn't get on terrifically well, but it will certainly appeal to many of you out there. The graphics are nothing special and there is a limit to the sound. However, if you like the Green Beret kind of game you will certainly want to take a close look at Bazooka Bill. It's got that same fast action, shoot 'em down aggro style — and a lot of gamers are going to love it. I'm sure.

Price: £9.95
Graphics: ★★
Sound: ★★
Playability: ★★
CCI Rating: Iffy

MEGA REVIEW

CCI Rating **C64**



Yie Ar Kung Fu II by Ocean

Like everything nowadays there has to be a sequel, even in computer games with titles like Fist II, Super Huey II, Cauldron II and now Yie Ar Kung Fu II.

Two isn't bad at all. As you probably know from the first instalment, a gang of eight fearless fighters had to be wiped out. Well one of those eight, Yen Pei managed to survive and during the past twenty years he has formed another group of eight which are just as deadly as the first lot, if not even deadlier. There's Yen Pei himself who has iron pigtails (nasty!), Po Chin who is a dab hand at fire breathing and Li Jen who likes throwing lightning bolts at you to name but a few of the more agreeable tricks they try.

At the start of the games, midgets come flying towards you. If you destroy three midgets, you will be awarded with one tea leaf (Great! That's what I've always wanted! Ed)

When you have three leaves, then press the Commodore key and, hey presto, you will have a new supply of energy (Tea? Is that what's known as 'Pot'. Ed)

Chow Mein Noodle Power is the other asset that you are granted (Is this some sort of an advertisement for a Chinese take-away? Ed). This appears on the screen and it makes you invincible for a few seconds. (Noodle Power? Invincible? Have you been smoking something strange? Ed). The same techniques of fighting apply as do the energy bars. You may play against the computer or against another player and the first player to win two matches is the champion.

Yie Ar Kung Fu II is really a very good game. However it was still the same kind of theme ... just going up to someone and kicking merry hell out of them (nobody says that isn't fun, though highly immoral!). The graphics are large and colourful as are the backgrounds. The sound is up to the usual Ocean standards (very good in other words).

A game that is good value for money and a worthy sequel, but listen here software companies, how about something a little different eh? (Yes, I agree, Noodle Power!!! Ed)

Price: £8.95
Graphics: ★★★★
Sound ★★★★
Playability: ★★★
CCI Rating: Mega

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STARRING THE KIDS FROM C.C.I! (FAME AT LAST)

As CCI is a magazine high on style, we're offering a very striking prize in this special competition. We have gathered together some very chic computerwear from the top games houses in the industry and someone will win the lot! . . . a different T-shirt for every day of the month.

There will be three prizes of five T-shirts each for runners up. As most T-shirts are either large or medium, please specify which you would prefer.

To win these add-ons for your wardrobe, all you have to do is to find the questions to these answers:

1. A grocers shop in Grantham
2. Roald Amundsen got there first
3. "Et tu, Brute?"
4. "Thriller" by Michael Jackson
5. 1066

Send your questions on a postcard to: T-Shirt Jamboree, CCI, 40 Bowling Green Lane, London EC1R 0NE to reach us by March 15th.

MEGA REVIEW

CCI Rating C64

CRISP

Tarzan

Tarzan by Martech

Aaaaaaaahhhhhh! I fly across the screen with the greatest of ease, and 'ouch!' slap bang into Martech's brand new release of Tarzan. You've probably read about Trazan, Lord of the Apes and wondered how the hell he does what he does, like fighting ferocious beasts and swinging through the trees in search of his beloved Jane. Well here's your chance to find out. You were left alone, by your real parents (was it something that you said?) to fend for yourself in the evil depths of the jungle. Kala a she-ape took pity on you and put you under her wing and brought you up in the way of the jungle. Many years later Tarzan claimed what was rightfully his. He became Lord Greystoke, Peer of the Realm. Whenever it was necessary he could revert back to being the savage ape he was brought up as from the clean cut, tie and collar man he had become since assuming his inheritance. Lady Jane Greystoke was in big danger. The chief of the Wamabo, (sounds like a pop group!) Usanga, had Jane held captive. She was to be fed to the panthers and vultures if Trazan, Lord of the Jungle, could not recover the seven gemstones that had been half inched (half inched? He was an aristocrat not a cockney! Ed) from the tribal shrine. These stones were believed to be eyes of the rainbow! (The only eyes in rainbow I know of are those of Bungle, George & Zippy!!) Usanga was mad at their loss and has given you, Trazan just three days to recover them. (Impatient, isn't he?) If you don't find 'em then the little squirt will feed Jane to the animals on the third day at sunset. Nice friends you've got Trazan.

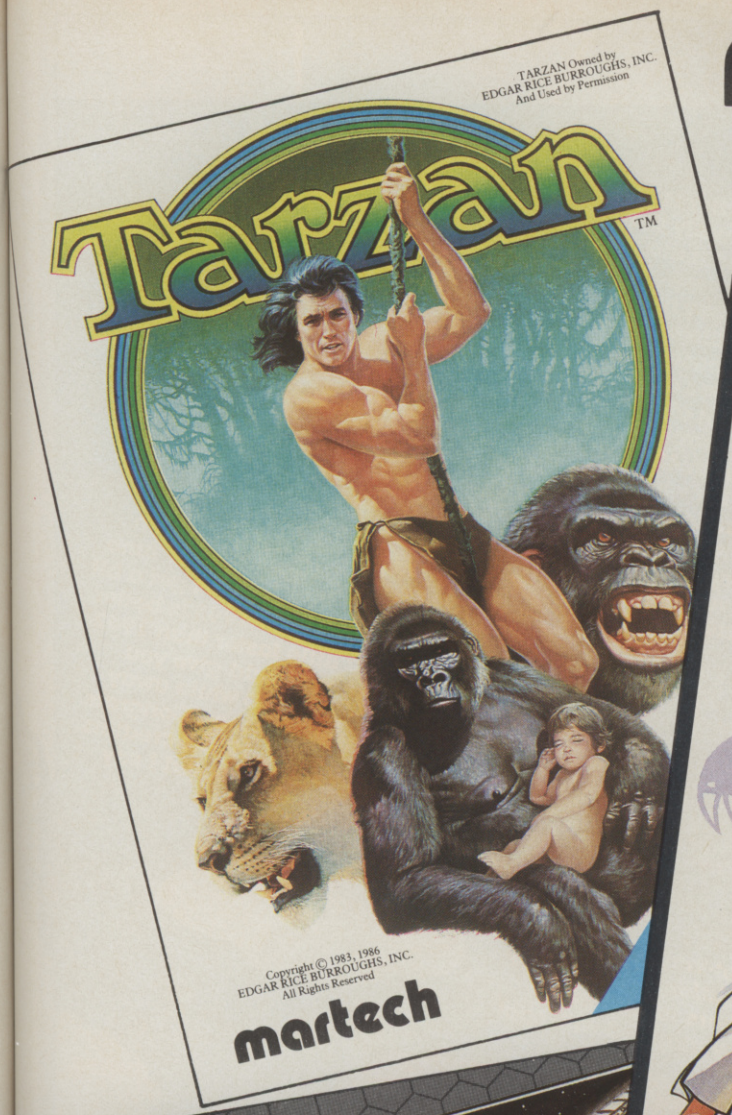
There are various objects that are scattered around the jungle that will help you in your quest, such as lengths of rope etc. The gemstones, should you be lucky enough to find one will be partially hidden in a little black box. All the best things are hidden in black boxes! You view the jungle side on through thick trees. The graphics of the jungle are very good and detailed they are also very colourful. The graphics of

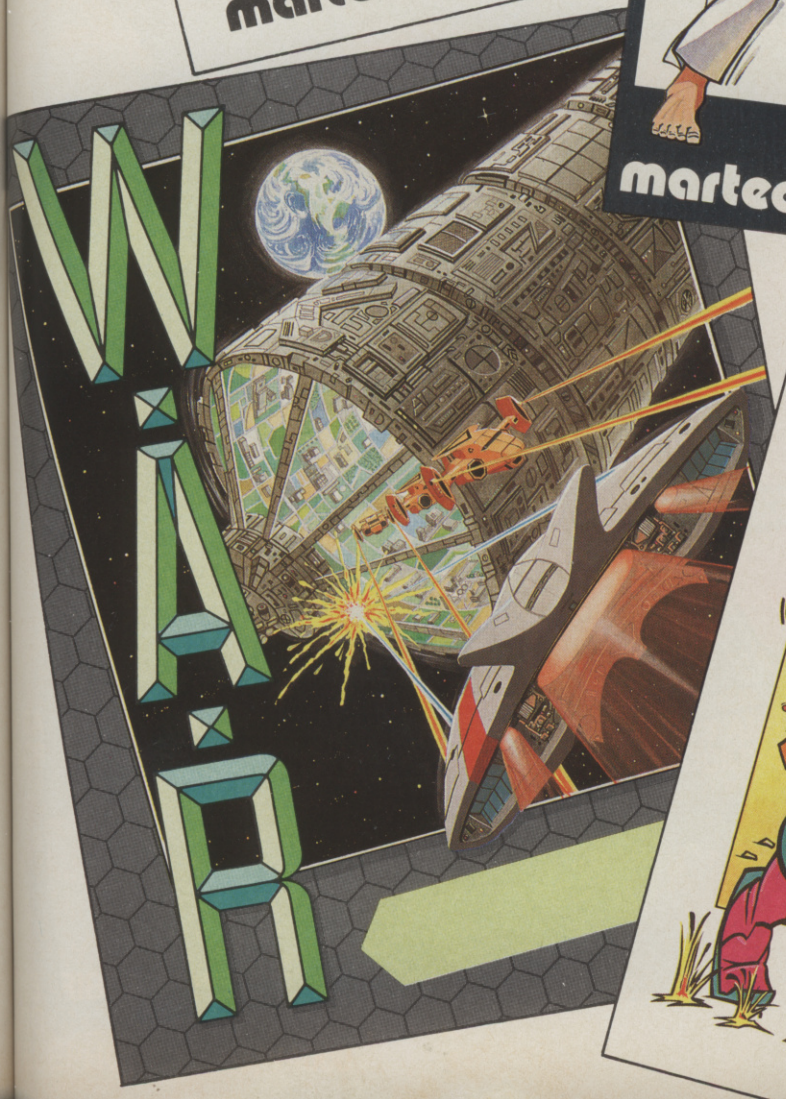
the characters are, however, not as good. As those of the jungle but never mind. The sound is that of a jungle drum which is well programmed but I should think it could get a little boring after a while (unless jungle drums are your kind of rhythm.)

Trazan is very much a game for maze game fans. Also if you enjoy making maps then this should appeal to you as well as a map might be very helpful. Overall I found it just a little on the disappointing side after the likes of Sam Fox and WAR from Martech, but it is quite a good specialist arcade adventureist style game, and a lot of you are going to be spending enjoyable hours swinging through the trees.

Price: £9.95
Graphics: ★ ★ ★
Sound: ★ ★
Playability: ★ ★ ★
Crisp

martech....
LIVE THE GAME!





MEGA REVIEW

CCI Rating

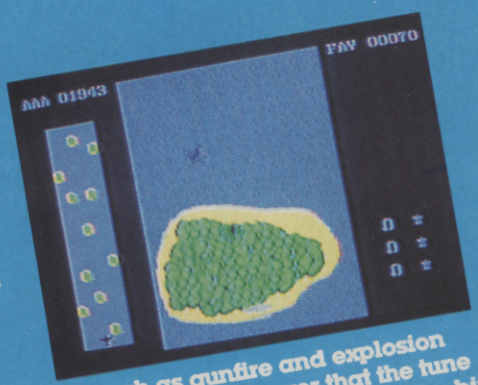
C64

MEGA

1943 — one year after by American Action

Your radio crackles and Commander R.B. Wildfox comes over loud and clear. He has selected you to help out in the vicious war that is currently raging in the Pacific. The Japanese kamakaze pilots think that nothing can stop them but you are out to prove them wrong. The year is 1943 one year after the fierce battle began. You have been assigned a P52 Lightning Fighter Bomber and as several missions abroad have since been failures you had better succeed or Bert Digdale will be digging his own grave! As Mr. Digdale you have to patrol the most dangerous stretch of the Pacific and you only have your P52 to keep you company. So after the challenge in 42 can you keep going thro' 43?

I think that 43-One year after is maybe 1942 re-written. Actually the company that programmed it are Swedish and have made a very good job and I think that they have actually improved upon Elite's original version, if that is possible. As in 42 you have three lives and you are allowed to 'roll' out of trouble three times. The graphics in 43 are a lot smaller than in 42 but they are very detailed. For what they lose in size they gain in detail and smoothness. The enemy fire is a little difficult to see, especially when you are flying over an island. But there again you are supposed to be an 'elite' pilot-that's why Commander Wildfox chose you for this mission. There is a constant tune which is overlapped with spot FX such as gunfire and explosion noises. I wish however that the tune could be toggled as it does get a bit annoying. In my view 1943 is better and maybe a little faster than 1942 but either game should give you hours of enjoyment to while away the long winter evenings. Congrats for a great game to 1943's creators, American Action, or should I say Taks?



Price: £9.95
Graphics: ★★★★
Sound: ★★
Playability: ★★★★★
CCI Rating: MEGA

'43
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MEGAREVIEW

CCI Rating C64

AWESOME

FUTURE KNIGHT

Game of the Month CCI Awesome Award Future Knight by Gremlin Graphics

Another really excellent product from Gremlin, whose form on the Commodore gets better with each release. Gremlin, for my money, are the only label connected with the U.S. Gold/Ocean Empire that are actually pulling their weight these days, concentrating on good quality software rather than licenses and big names. Future Knight is quite simply the best arcade adventure around and anyone else in the same field (Odin and Argus, take note) had better watch their backs. The copy I had was minus inlay and therefore without plot. I construed it to be about a space-knight stranded aboard a huge spaceship (or one of several spaceships) in search of his lady-friend who has been abducted. You walk about the section of the ship you're in, and teleport to others whenever you find the appropriate exit. Obviously there's more to survival than that, and you will find a 'shoot-and-run' policy pretty useful while you explore the early stages. Your man is satisfyingly immune to falls and he moves about the scrolling levels by ladders (up and down) and by running or jumping (left and right). He can also fire one of a number of weapons, you will find these quite easily as you travel and they seem to be inexhaustible.

In play Future Knight looks like Paradroid and plays like Ghost's and Goblins. The bas-relief graphics are very effective, but some of the sprites are obviously derived from better known games (watch out for the winged demons, fireballs and giant jumping robots).

"QUITE SIMPLY- THE BEST ARCADE ADVENTURE AROUND" T.M.

Some of the mutations, however, are visually stunning and totally original — they tend to frequent the lower levels, so beware! Obviously collisions drain your energy (you start with 999 points) but there are ways of replenishing it, and you do get 3 lives. You will also find a wide variety of objects to pick up and use — some keys, others security passes or weapons. I'm glad the author has left his screen clean and simple. So often these days arcade adventures are a tangle of icons and wierd indicators that no one has the patience or the 20:20 vision to unravel. In this game the icons are self-evident, the pick up and use of objects are virtually automatic, and there is a text window to explain the major events of interest to the very dense among you. Obviously some objects may only be used in certain locations or situations, and finding what and where these are is one of the game's objectives.

We love this game. Our advice is to go out and buy it, if only to see how an arcade adventure should be written. T.M.

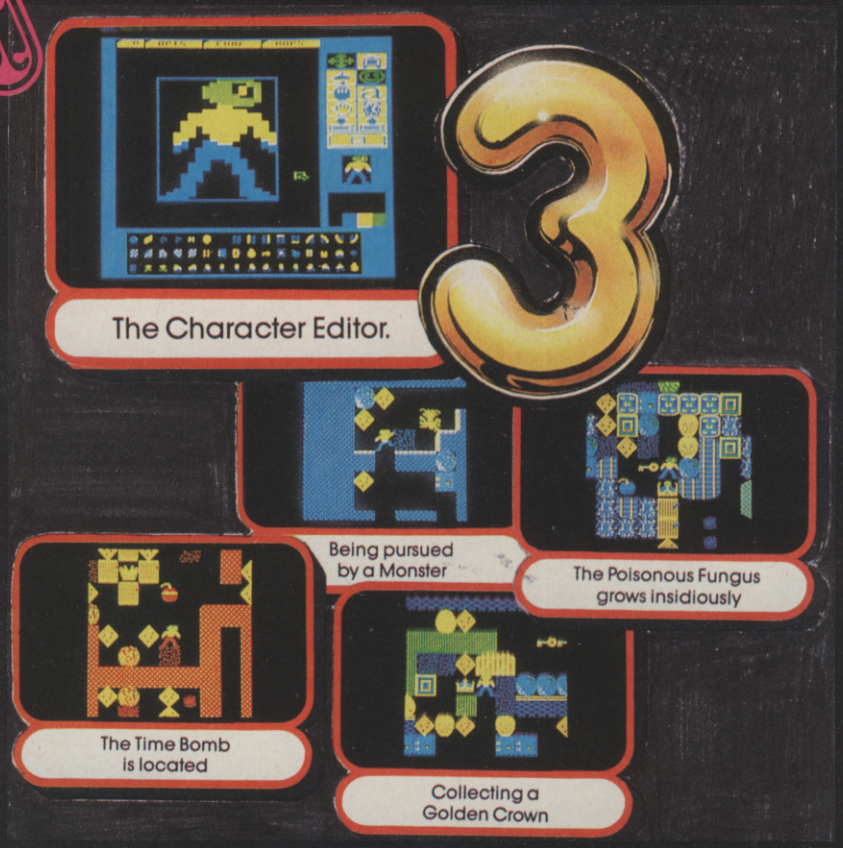
Price: £9.95
Graphics: ★★★
Sound: ★★★
Playability: ★★★★★
Rating: Awesome

MEGA REVIEW

CCI Rating **C64**

CRISP

REPTON 3



Repton 3 by Superior Software

The Repton games are probably better known on the BBC, but Superior Software have produced Repton 3 for our beloved 64. It has a touch of Boulderdash about it. You have to try and complete 24 screens of high drama and if you do so you can enter the competition that Superior Software are running. Prizes are £200 and Repton 3 T-shirts.

The 24 screens are packed with such things as monsters, rocks, diamonds, crowns and transporters (all in the Similiar vein as Boulderdash). In order to complete a level, our friend Repton must collect all the diamonds and defuse the time-bomb. This is none to easy as rocks keep falling around his person and monsters are chasing him into an early grave (worrying don't you think?) Eggs also fall about the place, when these land a horrible looking monster appears but he is easily dealt with as a heavy rock will knock him for six.

Cages are scattered around the joint which cannot be entered, however blue fungus opens up the cages and diamonds appear which are to be collected if you want to complete the level.

Other entertaining additions include crowns which appear on every level. These give you bonus points, also there are time capsules which reset the bomb and transporters which can be used once only to move around the level if you get into a tight spot. If you lose track of where you are, a map is at hand but this option is only available on screens A-E. After each level has been given to you so you can skip a screen or two next time around. Overall I liked Repton 3 better than Boulderdash as it has a screen & character designer which I think should have great appeal. There is a nice tune which can be turned off during the game (if you want to spare your neighbours from 24 hour madness). The graphics are large and beefy and pretty well detained. Overall not at all a bad game. If you're feeling flush with your after Christmas cash, then this might well be the one to go for.

Price: £9.95
Graphics: ★★
Sound: ★★★
Playability: ★★
CCI Rating: CRISP

MEGA REVIEW

CCI Rating C16

CRISP

Space 2 by Midas Marketing

Everyone's doing it! US Gold, Bubble Bus, Firebird; now Anco have bravely entered the fray with a new label — Midas Marketing. They're not quite pure gold yet but if they improve a little on this release they'd be very near.

It, as you may have deduced from the title, has two games on it and so proves to be even greater value than the usual single Anco release. In the first game, Galaxy, you've shot back to the days of good old Space Invaders; not that I'm complaining. Think of the millions of people who have never played it! There are tons of levels, each with a different type of very wicked meanie displayed on your control panel in miniature. You also have to keep a watch on your fuel and cannon temperature.

When either one gets too low or too high (respectively) you're in for a tough time!

The second on the tape is Pilot, it has a simple theme but is very addictive. The plot goes like this; you must carry two pods of fuel through dangerous caverns of Vogen to supply a damaged reactor with fuel. But all is not as easy as it sounds; your two pods are big and bulky and are attached to each side of the ship. If you push your joystick up the pods seperate, thus letting you negotiate split caverns, then you just pull it down to bring them together again.

It gets compulsive, as you find yourself getting a little further each time, and the graphics for the ship are excellent.

This tape is very good value, and will keep you busy for quite a while. It's well worth the £2.99 price tag and will probably satisfy even the most demanding of you.

Keep it up Anco, and release other good, bargain price games such as this Midas special.

Price: £2.99
Graphics: ★★★★
Sound: ★★★
Playability: ★★★
Rating: Crisp (very)

CCI Rating C16

DODGY

Olympic Skier by Mr. Chip Software

This is one of Sean Southern's earlier games... among his more recent releases is the 'Awesome' Trailblazer and 'Crisp' Finders Keepers. When you look at this game and compare it to the ones just mentioned, you can see how much he has improved his programming skills — I'd say about 100%!

You have to work your way down a ski slope, avoiding everything. These obstacles range from rocks and holes to trees and ice pools. The game is played with a plan view and scrolls upwards. Your skier is a black, unidentifiable blob and turns very sharply into the turns, making him (or her — we don't want to get sexist do we?) damned hard to control.

And then, wait for it, is the way the computer jokes when you crash. At first it's amusing,. then it gets boring, then downright *irritating*. It makes bad comments like "Are you getting Piste off?" or "Have you got something against the ground? You keep hitting it" See what I mean? Now don't start retching yet there's worse to come, but I think this gives you enough of an idea of what I mean. Corn personified.

However, I have to say despite all appearances this game isn't as bad as it might seem. It's got a good rendition of the 'Ski Sunday' programme theme tune and is certainly playable for a few hours, but after that the bad graphics and the jokes that annoyed me (I though you had a sense of humour! Ed) and boring gameplay let it down.

Price:£2.99
Graphics: ★★
Sound: ★★★
Playability: ★
Rating: Dodgy

C16/PLUS 4

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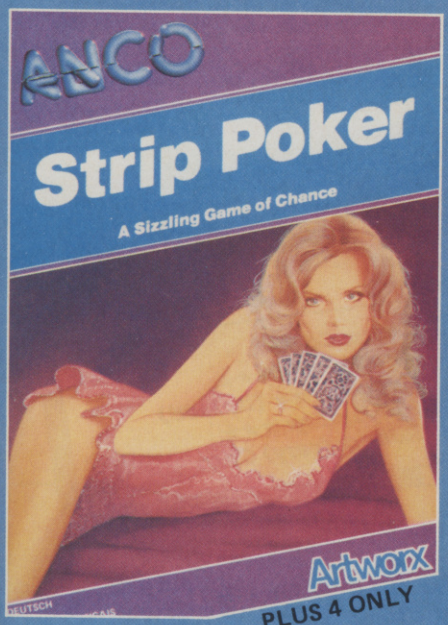

Settle down for an evening of a sizzling entertainment of Poker against delectable Suzi and Melissa.

Cassette: £7.95 Disc: £9.95

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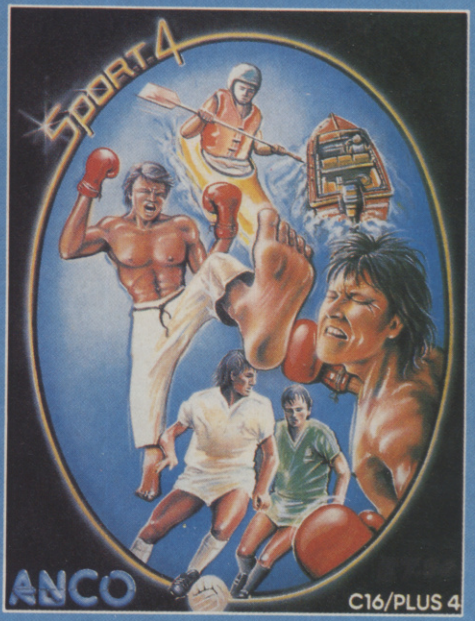

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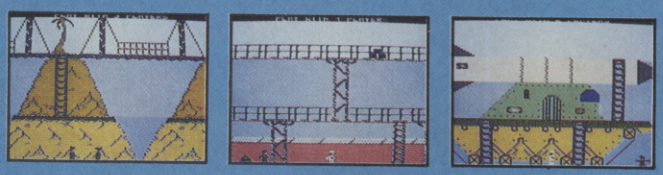

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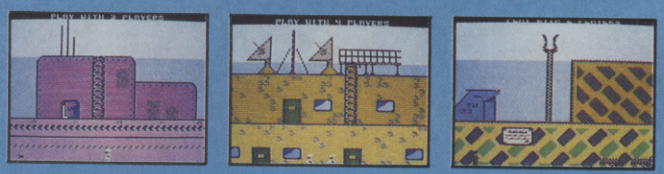

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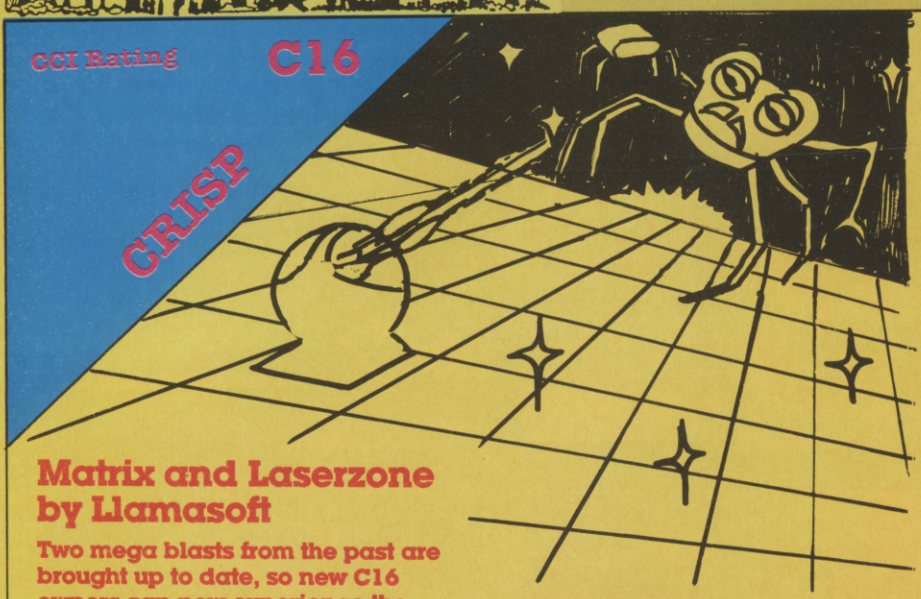
MEGA REVIEW

CCI Rating C16

CRISP



Matrix and Laserzone by Llamasoft

Two mega blasts from the past are brought up to date, so new C16 owners can now experience the pleasure of pure on - screen mayhem courtesy of CCI's columnist/programmer genius, Jeff Minter.

Firstly is the mindblowing Matrix, a shoot 'em up of the highest order. The storyline goes something like this. You are a veteran of the grid wars and now you must fight again because the aliens are returning.

That's all you need to know because I'm sure even the most peaceful among you have animal, aggression-filled instincts! (I thought you were aspiring to be a saint! What's this about aggression? Ed).

You are set out on a grid. At first it doesn't look daunting, you know the kind of thing — a few squadrons of ships zooming down at you. But then all of a sudden you find yourself shooting comets and deflectors and ships start bouncing all over the screen.

If that sounds too much for you, well you can try your hand at Lazerzone, a 'space invaders' with a difference. You control a cannon. Well I should say cannons really, one on each axis — some difference eh? Skullships and bugships are your cannon fodder and every now and then an Iratain Death Satellite appears and blows you up, leaving you with one life less.

The key to success in this game is in diagonal shooting. This enables you to shoot from one axis to another — so if a skull or bugship lands on the horizontal axis you can blast it away with the vertical axis cannon.

Jeff Minter never fails to provide top class entertainment. There's no doubt about it, he's got that magic touch.

These two games are well worth the £6.95 price tag. They will provide you with many hours of adrenalin pumping action!

Price: £6.95
Graphics: ★★★★
Sound: ★★★ (its loud)
Playability: ★★★
Rating: (very) Crisp

CCI Rating C16

NAFF

Fighting Warrior by Melbourne House

This game is released amid a cloak of secrecy — no advertisements, no press releases, no nothing, just a game sent to the magazine — I wonder why ... Could it be like some films, so awful they are afraid even to mention it?

Enough of the speculation and I'll tell you about the game. You, as the title suggests, are a fighting warrior and you're out for some action. You've been trained with a sword and in martial arts, so you're no pushover. In fact judging by the proud way your character walks you're a bit of a hard case who doesn't take any hassle from anybody! Better stand aside, stranger ...

As you beligerently walk along, you find yourself being attacked by what looks like your twin brother (is this Alter Ego? Ed). I found a few head kicks and jabs with my sword dealt with him. Then I had to beat up an old man dressed in rags and a vicious little dog. Between doing this I was walking through a desert with palm trees and some walls with Egyptian graffitti on them — very boring. I also kicked down these boxes — which if hit incorrectly make the opponent you've just fought come back for you to fight again — very, very boring. After about fifteen minutes of this you suddenly walk up to a doll and it says 'The End'.

What a disappointment it was to play this game. Even with the great graphics it was boring to play and I can't imagine anyone enjoying playing it for a length of time. Oh yeah, I almost forgot, there isn't any sound.

Price: £5.95
Graphics: ★★★
Sound: (none)
Playability: ★★
CCI Rating: Naff

MAGNIFICENT 7 Software

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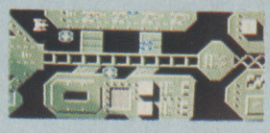

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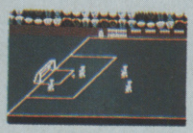

PHARAOH'S TOMB

An all graphical adventure with many traps and problems to solve. Presented in perspective /3D effect.

C16/PLUS 4

Price £4.95

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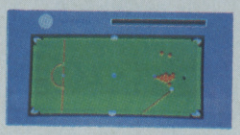

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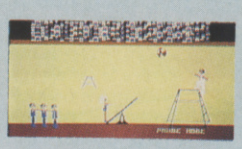
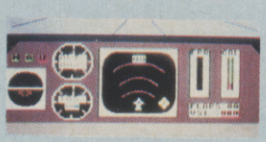

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CCI Rating C16

CRISP

PROSPECTOR PETE

Prospector Pete by Mastertronic

Prospector Pete puts you in the shoes of an oil prospector starting out. As you've most probably guessed it's not as easy as that, life never is, is it?

I was born under a wandering star... (What's that got to do with it? Ed).

As you go around searching for oil, you leave a trail behind you indicating areas you have already dug up. You move around pretty fast, getting faster as you get further into the game. When you get about three quarters towards the end of the screen, it starts scrolling swiftly and smoothly — great!

Your job is to collect all the oil pockets on the screen. Along with these you can pick up extra points for getting precious gems and bonus squares. As you start, a stick of dynamite at the bottom of the main shaft starts sizzling, nasty! If you run downwards towards it and turn at the last minute, I find that when the water begins flowing it doesn't rise as quickly. Oh yeah... water... I forgot to tell you about the water. It follows you around your tunnels and kills with one little touch. Nice eh? Little bug-like things swim around in the water after you. Yuk! But one stick of dynamite soon puts paid to them.

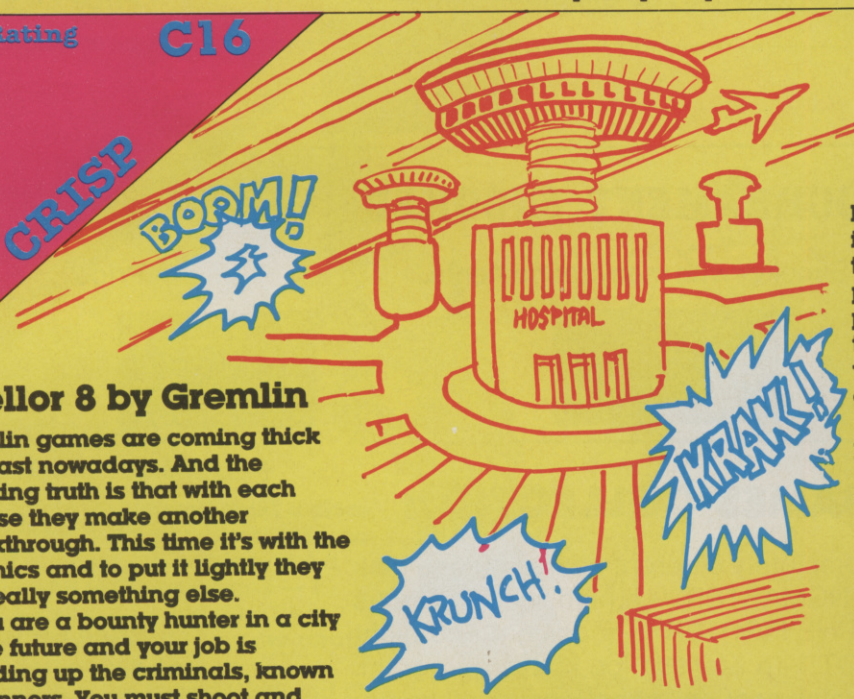
The screen is set out in a way that reminds me of Mastertronic's Return of Rockman, but don't worry, it plays a *lot* better. The graphics are a little on the bland side, but still good. The sound is average and, as usual with Masterwonenein, the game is extremely playable.

Mastertronic nowadays seem to be making every single one of their games top notch quality... they are really giving outstanding value. Lets hope this trend continues in their forthcoming releases.

Price: £1.99
Graphics: ★★★
Sound: ★★
Playability: ★★★
CCI Rating: Crisp

CCI Rating C16

CRISP



Xcellor 8 by Gremlin

Gremlin games are coming thick and fast nowadays. And the amazing truth is that with each release they make another breakthrough. This time it's with the graphics and to put it lightly they are really something else.

You are a bounty hunter in a city of the future and your job is rounding up the criminals, known as runners. You must shoot and capture these desperate villains using your vehicle, which has shields, a gun charge and decreasing amounts of fuel. Once you have caught a few villains you must go to the bank to exchange them for credits. This is a tricky business because as soon as the queue starts moving the price for the bad guys goes down.

Sometimes you end up getting 3 credits for each criminal and other times 83 credits. Big difference! Just one of the exciting uncertainties of this well-worked out game.

Once you've stocked up with credits, you can make your way to the shop where you can stock up on fuel and buy extra equipment and gadgets.

If in your rounding up of the low lives you happen to shoot an innocent victim, you can take him to the hospital where for the meagre price of 78 credits you can get the poor guy patched up. Don't shoot three though, cos that means that you get phased out yourself and the game is over.

The little city you travel around is pretty small and you can really zip down the passageways at high speed shooting everything in your path. Wow!

Xcellor's graphics are excellent, in the classic bas relief Uridium style and are the best thing about the game. This game is complicated and subtle. The graphics alone are worth the price. It has instant appeal and will be a game that many gameplayers will find just the job.

Price: £6.95
Graphics: ★★★★★
Sound: ★★★
Playability: ★★★
CCI Rating: Crisp

THE COMPANY THAT TOWERS ABOVE THE REST FOR C16 PRESENT

C16

GREMLIN

THE WAY OF THE TIGER
FUTURE KNIGHT
XCELLOR 8
BOUNDER/PLANET SEARCH
FOOTBALLER OF THE YEAR
TRAILBLAZER
C16 CLASSICs III
MAGICIANS CURSE

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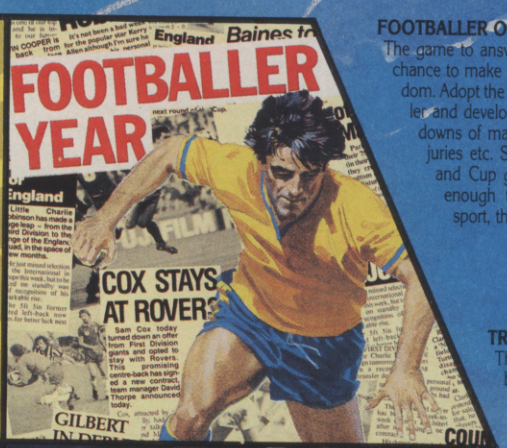

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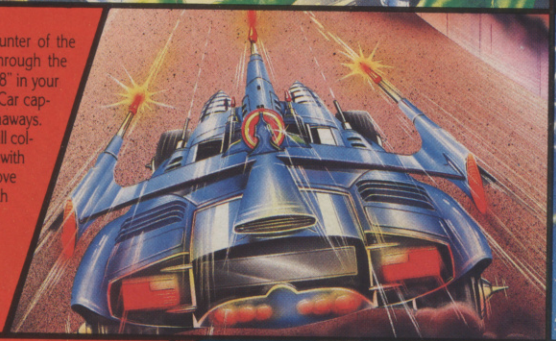
£6.95



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Gremlin Graphics Software Ltd.,
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Tel: (0742) 753423.
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MEGA REVIEW

CCI Rating **C16**

MEGA

Who Dares Wins II by Tynesoft

Cue fanfare, cue applause, aim spotlight on Tynesoft. At long last the controversial Who Dares Wins II is out for the C16. I say controversial because when first released for the '64, it was called back for changes after Elite got stroppy — hence the II placed on the end of it. I feared that all the fuss and hype might mean that the conversion would be an anti-climax. But this game has lost nothing at all in its conversion and retains all eight levels.

However be warned, it is fiendishly difficult. I can promise you that even the most hardened of gamers will find this a very tough challenge indeed.

It's well presented and has a terrific little tune, from the film 'Great Escape', written by Ian Waugh, CCI's very own musical genius — well done.

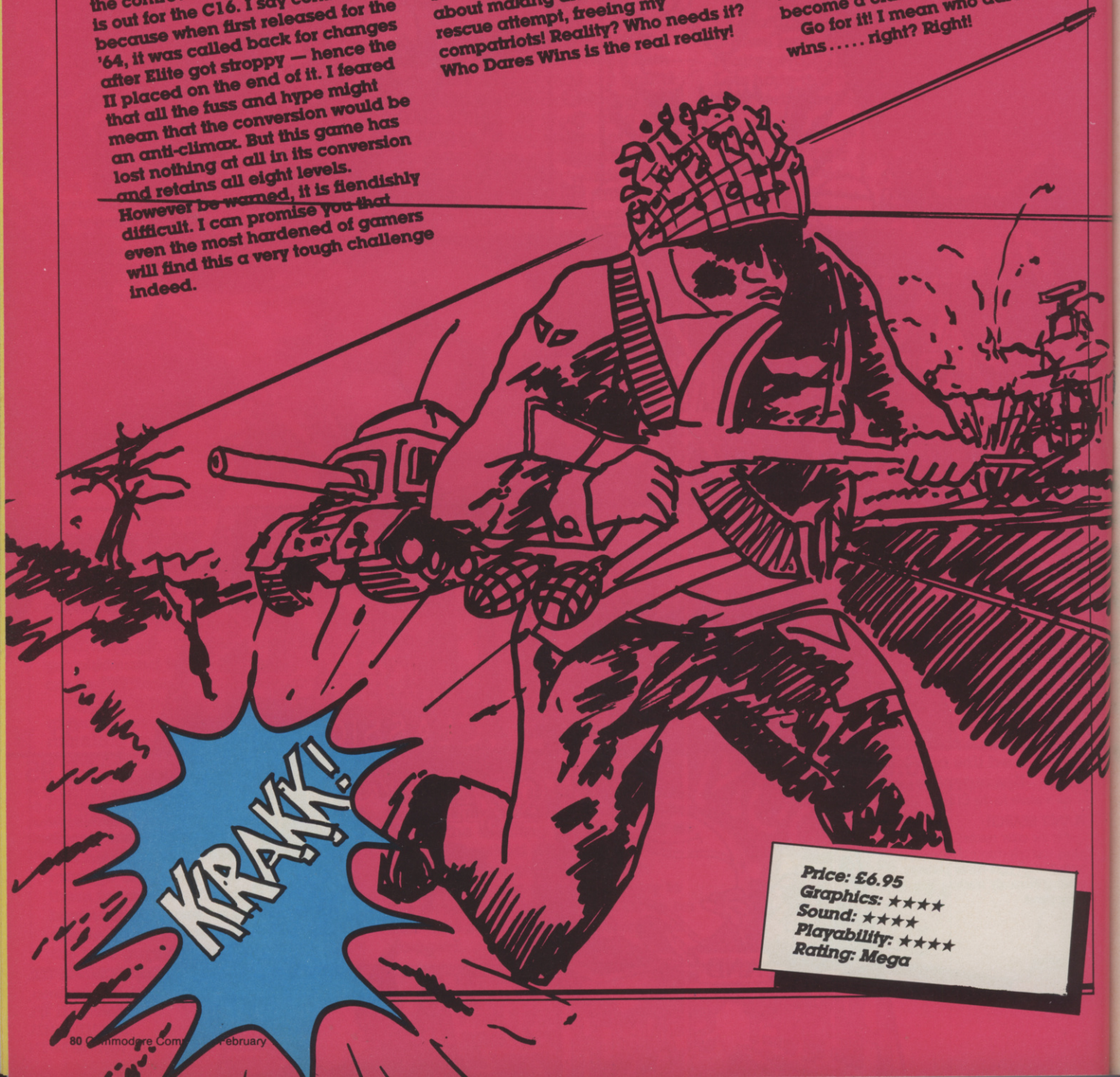
The graphics are also excellent, especially the jeeps that drive past and the bomb craters. They are delightful in every way.

As you run along shooting, 'The Enemies' soldiers fire back, (very accurately too) and call up reinforcements. You throw a grenade — bang! Up goes a jeep. But you're soon running low on grenades, phew! Just made it to an extra supply in time...

You can see what this game has done to me — now I live for the next sortie with 'The Enemy', I dream about making another successful rescue attempt, freeing my compatriots! Reality? Who needs it? Who Dares Wins is the real reality!

When you compare this with Commando or other games of a similar type you can see how much effort Tynesoft have put into it. It doesn't scroll, but does neat screen flips that are so smooth and fast they make you believe it is scrolling. But even something as great as this has a few faults. The bullets seem to hit you, even if you move as far away as you can in the time you are given. You also walk slowly — hence being hit by all the bullets. But even with these few complaints against it, Who Dares Wins II stands head and shoulders above all the other games of its kind. This is a game that will become a classic for the C16.

Go for it! I mean who dares wins ..... right? Right!



Price: £6.95
Graphics: ★★★★
Sound: ★★★★
Playability: ★★★★
Rating: Mega

EUROPEAN GAMES

C16/+4

This superb sports simulation, best yet seen on the C16/Plus 4 uses large detailed colourful animated graphics for ultimate realism.
Courtney King Review - "Crisp, almost Mega, another winner from Tynesoft".

Cass. £7.95

FUTURE SHOCK

C16/+4,

An amazing new style of Arcade game with inter-active sub plots, using large detailed graphics for superb detail. This game pushes the machine and the player to unparalleled limits for many hours of enjoyment making this a game not to be missed.

NEW RELEASE

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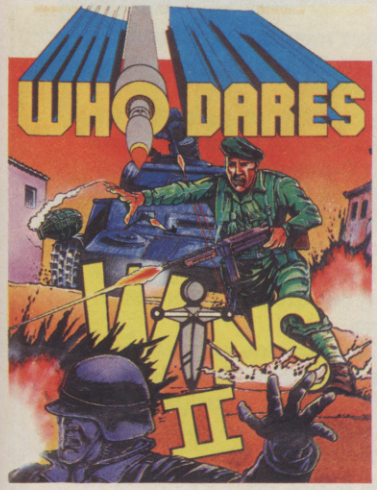

WHO DARES WINS II

C16/+4

At long last a conversion for the C16 of a No. 1 Hit that lives up to its original. Over 40 screens of fighting action (more screens than the original 64 version).

Cass. £7.95

NEW RELEASE
Voted Mega Award (CCI Feb '87)

JET SET WILLY II

C16/+4,

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COMPUTER SOFTWARE

Tynesoft Computer Software, Addison Industrial Estate, Blaydon, Tyne & Wear NE21 4TE. Tel: (091) 414 4611

MEGA REVIEW

CCI Rating C16

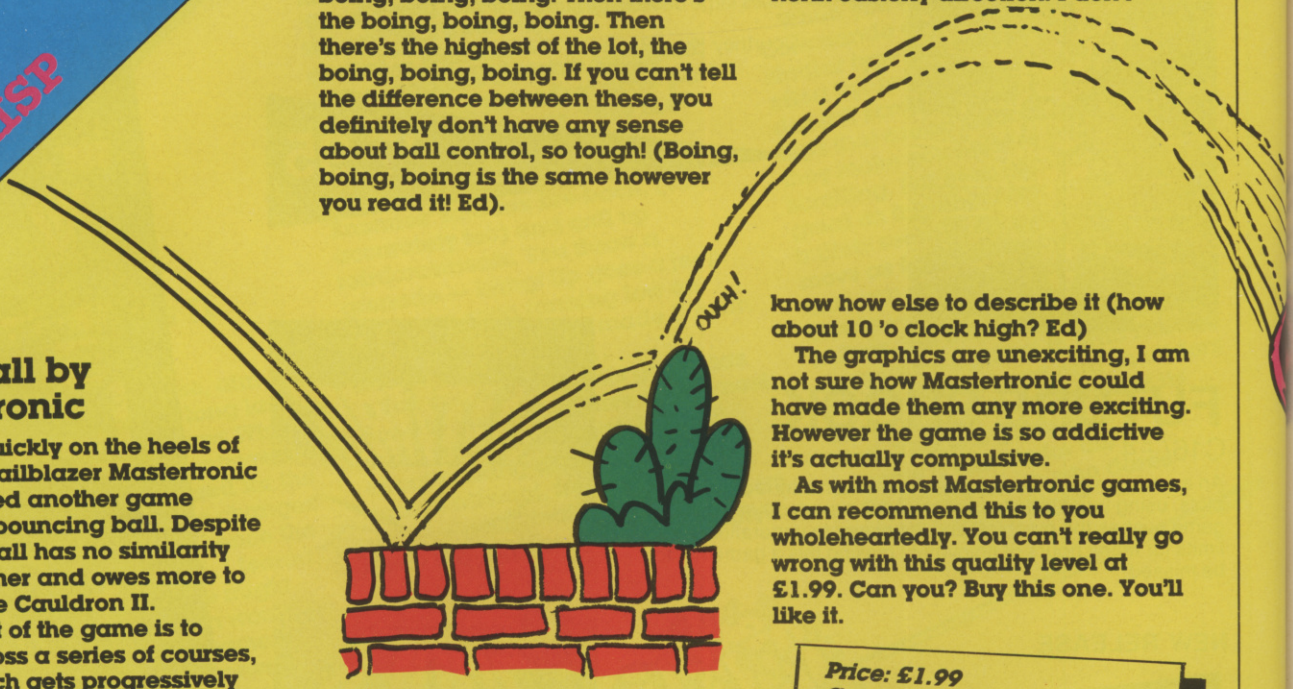
CRISP

Powerball by Mastertronic

Following quickly on the heels of Gremlin's Trailblazer Mastertronic have released another game involving a bouncing ball. Despite this, Powerball has no similarity with the former and owes more to the '64 game Cauldron II.

The object of the game is to bounce across a series of courses, each of which gets progressively more difficult. You have a time limit for each course, and get four balls (no funny jokes please) which get burst with annoying frequency.

There are three kinds of bounces at your disposal. First is the normal boing, boing, boing. Then there's the boing, boing, boing. Then there's the highest of the lot, the boing, boing, boing. If you can't tell the difference between these, you definitely don't have any sense about ball control, so tough! (Boing, boing, boing is the same however you read it! Ed).



Playing the game is great fun, bouncing onto steps, over walls, onto moving blocks and onto cacti — ouch! Luckily when you end a game you can continue where you left off by pushing your joystick in a north-easterly direction. I don't know how else to describe it (how about 10 'o clock high? Ed)

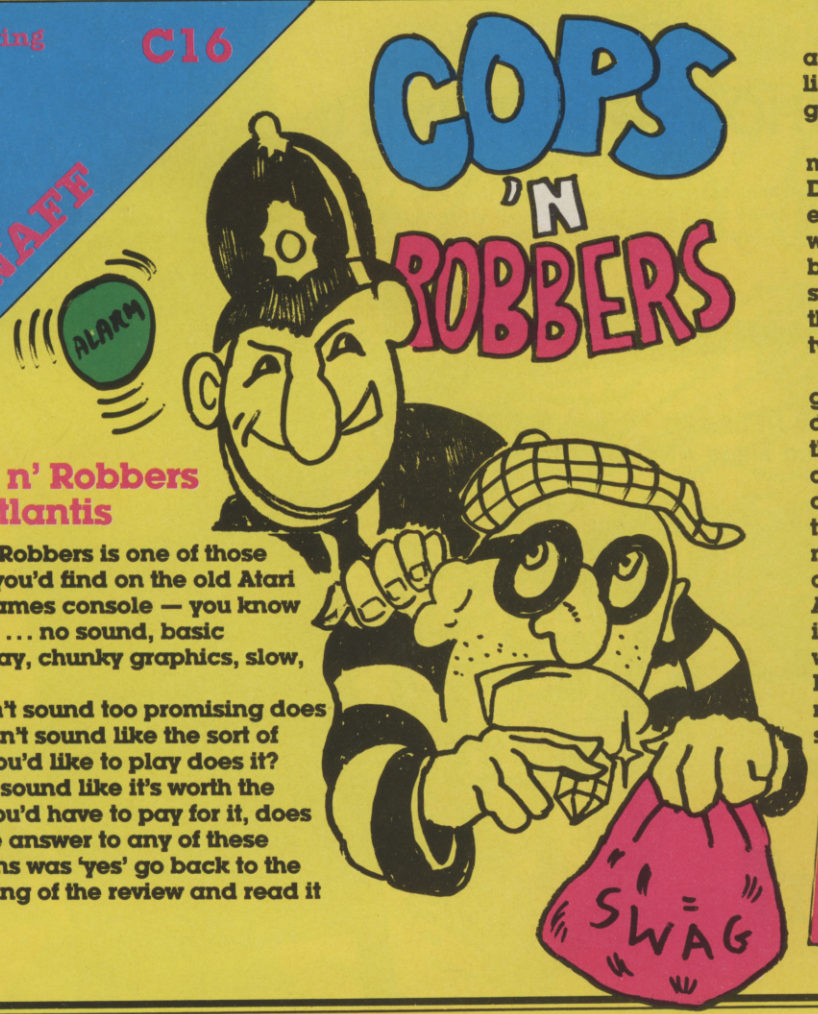
The graphics are unexciting, I am not sure how Mastertronic could have made them any more exciting. However the game is so addictive it's actually compulsive.

As with most Mastertronic games, I can recommend this to you wholeheartedly. You can't really go wrong with this quality level at £1.99. Can you? Buy this one. You'll like it.

Price: £1.99
Graphics: ★★★
Sound: ★★★
Playability: ★★★
CCI Rating: Crisp

CCI Rating C16

NAFF



Cops n' Robbers by Atlantis

Cops n' Robbers is one of those games you'd find on the old Atari video games console — you know the type ... no sound, basic gameplay, chunky graphics, slow, boring.

Doesn't sound too promising does it? Doesn't sound like the sort of game you'd like to play does it? Doesn't sound like it's worth the £2.95 you'd have to pay for it, does it? If the answer to any of these questions was 'yes' go back to the beginning of the review and read it again, then maybe you'll see the light and resist the temptation to get this game.

You're a robber and you must make your way around the Acme Diamond Company, stealing everything in every room along the way. You have a limited number of bullets to shoot the 'Cops' and strange things resembling skulls that hang out around a Pac Man type maze.

There are lifts you can get into to go to the next floor. There is also dynamite that you must get to blow the safe (I think). The safe has a combination which you must decipher. If you can't decipher it, try blowing it up — a lot easier and more practical seeing as the police are already on to your game. Atlantis have done some good stuff in the past, especially when thre wasn't much C16 software around. It's sad to see they have not reached their usual acceptable standard with this game.

Price: £2.95
Graphics ★★★
Sound: ★
Playability: ★
CCI Rating: Naff

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MEGA REVIEW

CCI Rating **C64**

Flash Gordon by Mastertronic

Mastertronic have teamed up with a legendary star for the latest addition to their M.A.D. range. They take you into the crazy world of Flash Gordon.

Here's the plot. The evil Ming has set his sights on destroying Earth and it's been designated your job to stop the little rat. Unfortunately, for you, you've only got twenty four hours. Even more unfortunately is the fact that they are not real hours! So your task is clear and simple:- If Earth is to live, Ming must die and vice versa (What? Whose side are you on? Ed). You must destroy Ming's missile controls if you want any chance of survival. Just like all good adventure stories, things have not quite gone to plan and you've crashed your ship into the jungle on Mings home planet (and you call yourself a space-pilot??). You do, however have a way out of this mess. If you can find your way to Prince Barin's cave, he *may* help you. But before he will help you, you will have to win his respect. You do this by defeating him in a hand-to-hand contest. If you do win his affection, he will give you directions to Ming and also lend you a jet-bike. (Very handy if you ask me!) Suitably equipped with your jet-bike, you now must go in search of Ming.

If you were one of the thousands who enjoyed mapping games like Sabre Wuff JSW then you'll be right at home with Flash Gordon.

As the jungle part is very complex and dense, then a map seems a sensible way out. Also in the jungle parts, apes and such like creatures are out to hassel you (or even fix you permanently). The Inlay says that they are not members of the FG Fan Club (Nor am I for that matter!!). Even if it isn't one of Mastertronic's greatest, this will appeal to the arcade adventurers amongst you.

The graphics of Flash and the jungle are quite good and the foreground growth is pretty effective. Worth the money.

Price £2.99
Graphics: ★★★
Sound: ★★
Playability: ★★★
CCI Rating: Crisp

Check for Yourself!

List of games and companies

The latest issue of Bulletin 1000 Video Magazine has these goodies for you.

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Top Gun	Ocean
Double Take	Ocean
City Slicker	Hewson
Gauntlet	U.S. Gold
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PLUS/4 and C16 Reference Books

PLUS/4 and C16 users will be pleased to see that book publishers are starting to wake up to the undoubted market which exists for books relating to these machines. While the majority of books published to date have tended to be of a simplistic/new-user nature, the following two books have more grandiose pretensions and are offered as *reference* books. I think I have mentioned at some stage in the past my suspicions over books proclaiming to be the ultimate touchstone in what is still an evolving technology. However, the market itself is the judge of such matters and as always I recommend prospective purchasers to examine the book concerned before parting with any money.

C16/PLUS 4 Reference Book — Anco — £7.95

This interesting book originated in West Germany and has been translated into an English language edition by Anco Software Ltd. Although the emphasis is on the C16, the author has pointed out any relevant differences between the two machines during the course of the text. Curiously, the author's name is not on the cover but is hidden inside in the *Introduction*. As an author myself I feel that I would be a little upset at this. The book is divided into four parts and has an appendix but no index. The first part deals with the graphics facilities offered by the machine. The vast majority of programs used to illustrate a particular topic are in assembly language, a bold move and a pleasant change from the usual offerings. Indeed, the whole emphasis of the book is on assembly language as the demonstration vehicle which critics may say rules out beginners. However, I for one believ that there are too many books dealing with BASIC on Commodore computers and apart from relieving the boredom, assembly language offers the user more scope and long-term value than a high-level language on 6502-based machines.

This part of the book also covers the powerful *multicolour graphics* mode of the machine before moving on the *raster interrupts*. The latter form the basis of virtually all commercial games software and allow the programmer the facility to display a split-screen.

Many advanced programmers look down on the C16 and Plus/4. Yet many people who own these machines would like to begin programming with them. They have very few books to give them a simple start to programming these underated computers. Well now you can test your programming skills and learn how to make music run simultaneously with a game on a C16 or Plus/4. It's from Anco, whose very own Udo Gerz ran off with our Oskar for the Programmer of the Year, so you know you're getting sound advice.

Their book doesn't set out to inform the professionals, but it covers everything from high resolution graphics, with a mini drawing program and soft scrolling routines, to sound with a small example of its often neglected capabilities.

It is provided mostly in machine code, but fear not, all is explained clearly and straightforwardly. The book has a routine so you can restore newed programs and a machine code routine so you can use joysticks in your game.

As you can imagine, all this is bound to be confusing no matter how clearly explained, but the way the book encourages you to keep trying and look at other programs eggs you on. CCI sometimes includes C16/Plus 4 programs (though good ones are hard to come by) and they may also be of some help.

This book has to be considered as very useful for anyone who has even thought about trying programming. I'm sure you won't be disappointed. It certainly offers a wide range of information, especially for the beginner. Anco has done a very useful service by publishing this book.

CK

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Programmers Reference Guide for the Commodore PLUS/4

Well, this book has the title but does it have the contents such a famous title entails? Through 450 indexed pages, six chapter headings and seven appendixes the authors try their best. The vehicle selected for demonstration programs is BASIC — maybe because this book originates from the USA and users are less inclined to experiment. The book is very well produced with clear layouts and a high standard of typography so no complaints on that score. One of the authors, Sarah Meyer, a former technical writer at Commodore has two further books on the PLUS/4 to her credit.

Chapter One starts of with BASIC programming and is an expansion on that given with the User Guide. This section is extremely detailed and covers the subject exhaustively. The basis of this section is an explanation of each function within the BASIC provided using simple demonstration programs. The programs used may have been considered a little trivial however, they do manage to get the points across effectively. The next chapter deals with the built-in *3 PLUS 1* software. My own view on this software unfortunately cannot be printed without fear of prosecution — suffice it to say that I feel it is unusuable in any context beyond the amusement stage. Having said this makes Chapter Two an irrelevancy and would have saved more trees from the paper mill. However, the authors make the best of a bad job and provide useful information on a piece of barely usable software. At this point the book has entirely consisted of taking the reader slightly further than the User Guides — nothing starting just solid if boring material.

At Chapter Three we begin to move up a gear and we are introduced to the programming aspects of the machine. This uses BASIC to provide a collection of sections on diverse programming topics. Some of the more interesting aspects being mathematical functions, using arrays and error handling. I was

pleased to see the inclusion of using the much underrated **escape** and **function** key facilities. Chapter Four leads us into graphics programming and operations within the various modes is given good coverage. There is also a brief discussion on animation within the limitations of the hardware. Nothing to heavy so far, just more solid information.

Chapter Five moves into the world of 6502 assembly language programming. Thankfully there is no pretence at teaching the elements of the language — there are more than enough texts available elsewhere for this. It would seem that the authors have avoided this particular trap but fallen into the other beloved by so many authors of Commodore books for the 8-bit machines, namely the tedious regurgitation of the 6502 opcode instruction set and Kernal calls. This concept gentlemen is exhausted and readers are not longer rivetted by the same old pap — prospective publishers and authors take note, enough is enough.

The final chapter looks at peripheral devices and describes their operation. An emphasis is made here on program interaction with devices and there are many listings in BASIC or assembly language covering the disk drive, printer and RS-232 devices. The appendices cover the remaining well-worn areas of screen codes, ASCII codes, CHR$ codes, etc., etc. Sadly, the hardware itself in terms of a wiring diagram or pinout diagrams of the various ports do not merit a mention.

A more accurate title for this book would be *The Users Reference Guide to the Commodore PLUS/4* — no way does it deserve the title historically reserved for the best source of information on a Commodore machine. Yet do not let it be said that the authors have not done a very creditable job — the book does represent a lot of work on their part and there is some useful information in it. On this basis alone it represents the only book published to date on the PLUS/4 that I would recommend buying immediately. Alas we PLUS/4 fans **still await** the definitive volume of this much loved and underrated machine.

Title: Programmers Reference Guide for the Commodore PLUS/4
Authors: Merten C. & Meyer S.
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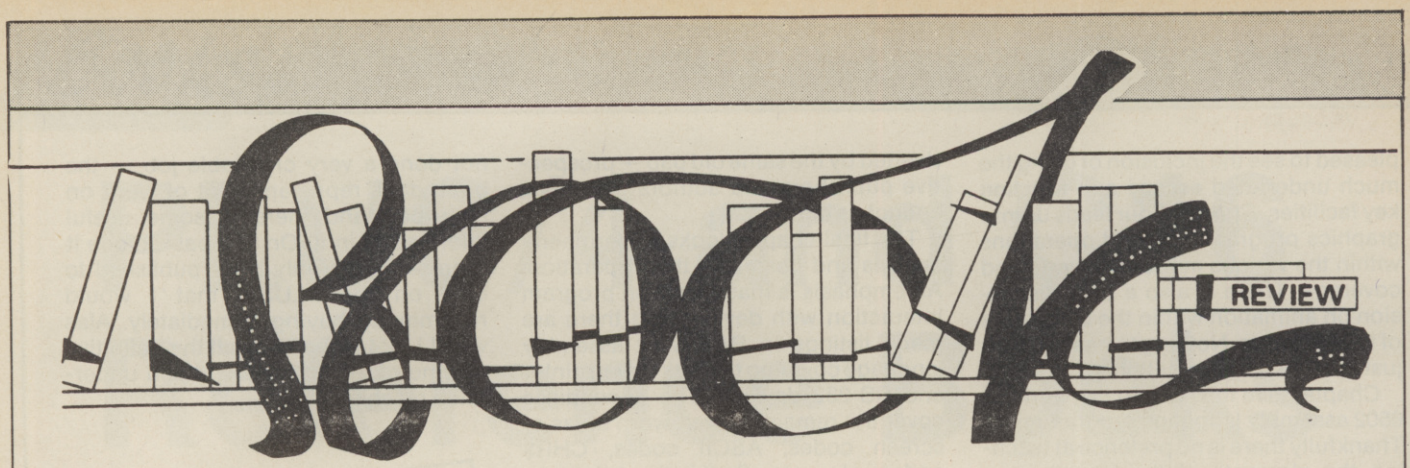

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Access

in 'The Coming Race', (in 1871), by Edward Bulwer Lytton, first Baron Lytton who, incidentally, finished life as 'one of the dullest pillars of Victorian society'? 'Trillion Year Spree' is a feast of such inconsequential asides as well as being full of more serious documentation. From Lynn Abbey, (who is she? She occasionally edits; with Robert Lynn Asprin — that's his name, I kid you not! — the 'Thieves World' series of books), via Robert Heinlein, J.B. Priestley, Jules Verne and H.G. Wells to Roger Zelazny, who won a 'Hugo' in 1966 for 'The Immortal', all the science fiction universe (or universes) is there. The contents even include extensive notes on each chapter as well as a 'Serious Critical Bibliography'.

Written by a world renowned master of 'SF', whose knowledge of his subject is awe-inspiring, and an extremely able collaborator, this work will probably prove to be the definitive treatise on 'SF' for many years to come. The 'mode' which Tennyson, in 'Locksley Hall', described as 'the fairy tales of science', but which has since grown to become a syllabus subject in many universities and colleges, this 'child' of Mary Shelley and Edgar Allen Poe has truly come of age and, in its biographers, has found two men worthy of telling its story.

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C FOR BEGINNERS — Ian Sinclair Melbourne House — £10.95

C For Beginners by **Ian Sinclair** is one of the first of the impending avalanche of books dealing with this popular (?) programming language. I have always rated this author highly. He specialises in programming languages and manages to combine humour with a workmanlike approach to the subject in hand. Thank God for an author who realises that it is humans who read programming language books and not some species of predigitised automatons.

In itself C is not a difficult language to learn, however because it is possible to write the most convoluted, obscure code known to programmer man, this attribute seems to be the classical trap into which so many books fall. I think that one of the reasons C appears difficult is because of the variety of non-textual characters used such as /, #, &, /, |, !, and *. In fact all of the characters placed above the number keys on your keyboard are in use at some stage. The first time you look at a C program is a memory not forgotten easily, simply because it looks like no other programming language implemented on a personal computer. The major advantage that C offers the casual programmer is flexibility — there is no need to construct everything at once, you can build the program up from tried and tested ture deems them.

This book is targetted at the **true** beginner to C (and there are plenty out there) coming from a home computer background. Therefore a background in BASIC programming is assumed — albeit not at some elevated position, and the average user will find no difficulty although the book is not a *Jack 'n Jill* work. The author takes the not unrealistic approach of *"... if your machine and compiler supports this..."* on the basis of the plethora of machines and various flavours of C compilers that are available. Sinclair himself is using the AMSTRAD kit for his hardware and Hi-Soft's C for his compiler although this decision has no detrimental implications for Commodore people — I believe the Hi-Soft C compiler is a CP/M product and so should run on the C128.

There are 230 pages, 12 chapters, 2 appendixes and an index in this book, thus on a weight for weight basis the purchaser appears to be getting value for money. The contents do not disappoint and starting from scratch we are taken on a journey through a description of what C is, principles and fundamentals, data types, loops and pointers, arrays and strings, yet more on pointers (they are quite important in C!) before rounding off with libraries, files and assembly language interfaces. The appendixes consist of an explanation of ones complement arithmetic and other binary operations — sticky subjects at the best of times.

This is the first book on the C language which I have been able to sit and actually read as opposed to using it for a reference or teaching volume at the keyboard. For once we have that rarity in the publishing world in the shape of a book that has an accurate title. **Highly recommended — an accomplished book by a gifted author.**

IB

Melbourne House,
60 High St, Hampton Wick, Kingston on Thames, Surrey KT1 4DB

SUPER C (COMMODORE 128) — First Software Ltd —£69.95

The buzz word in programming languages these days has to be 'C' (or should it be buzz letter?). C is a programming language developed around 1972 by Dennis Ritchie at AT&T Bell Laboratories. C's reputation as a reliable and easy to use "structured" language has spread over the years and has lead to its dominant position in the world of 16 bit micros. Many of the latest 68000 machines have had their operating systems and prime applications written in C. A great deal of its versatility comes about through its ability to permit low level interaction with the hardware itself whilst retaining the ease and flexibility of a high level language.

Once a programme has been written in C, it then has to be compiled. This is the process of translating the C-language instructions (source code) into their machine level equivalents. The result from this is then linked (with a programme known as a 'Linker') to any other code required such as one of the numerous routines already written that are contained in libraries and which give access to many of the basic I/O and screen functions. This linked code is known as 'executable code'.

Super C is a four part system. An editor — (a sort of simple word processor) with which to enter the source code, a compiler, a linker and a command processor, a type of DOS expander, giving easy access to all the disk commands and adding several new ones such as RAM disk. The accompanying manual is divided into two major sections, a User's Guide and a System Guide. The User's guide is designed to introduce you to the system. If you do not know how to programme in C, you will find an introduction to the basics of the language in this section. The System guide serves as a reference for your day-to-day work with the SUPER C System. Here you will find an exact description of the C language.

If you are the proud owner of a Commodore 128, would like to keep in touch with the programming scene and delve into the world of C, Super C could well be the programme for you. Whilst it may not be the best language to get the most out of your 128, it should serve to give you a good understanding of C and a better feel for the relationship between hardware and software. I found the talk through tutorial easy to read and a much gentler introduction to C than many others I have read. First Publishing has a reputation for good quality books and software and Super C isn't going to let the side down. **IB**

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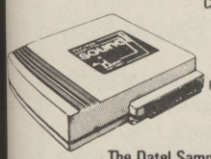

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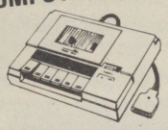

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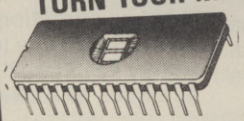

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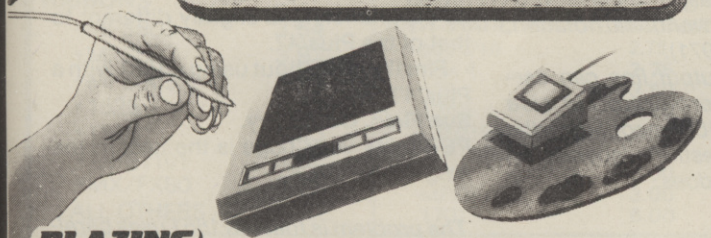

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Dear Rae...

This month your letters are answered by Rae West. Rae is the author of three large reference books on Commodore computers; the latest is Programming the Commodore 64, following Programming the VIC and Programming the PET/CBM. All are published in the UK by Level Ltd. Rae is also published in the USA by Compute! Books.

Software Queries

Dear Rae,
'Printer Enhancer for the MPS 803 (November issue) looks great, but how about us poor Plus/4 owners with Script-Plus and the MPS 803? Could you supply Pokes for the Plus/4'.
Mr P.A. Vidler, Watford.

I'm afraid there's no easy conversion; perhaps Duncan Anderson will provide a Plus/4 version in due course. But a note of caution: Commodore printers in graphics mode are slow, so don't expect proportionally-spaced text to zip out of the printer at its usual speed.

Dear Rae,
'I am trying to type in PRINTER ENHANCER for C64/128 (November CCI). I am not a programmer like these youngsters (I'm 63). I can recognise most of the symbols but cannot fathom out the one on line 100, like and 'H'. Can you put an codger out of his misery?'
Geoff Simpson, Canvey Island.

The reason for the peculiar character is that the printer isn't Commodore compatible, and doesn't reproduce all Commodore's graphics characters. So someone has attempted to draw the character by hand. Probably it's the Clear Screen character, or something similar.

Dear Rae,
I have spent several hours typing in the listing of 'Bouncing Ball' from June's CCI. The only thing I got however was the sentence 'working hard' and after a while the message 'illegal quantity error in line 220'. I'm absolutely sure my listing is the same as in the magazine! Can you explain why my program doesn't work?
John Van der Velden, Vlaardingen, Netherlands.

Darrin Carter, Tamworth, sent two listings, for the Plus/4 and C16; a map of England and Ireland, and a helicopter

These letters illustrate the problems I have when sent a listing, rather than a tape or disk copy. In the first case, it's very difficult to compare two listings: if instead we look at your error message, we find line 220 POKE SA+T, T=T+1: CH = CH+A: GOTO 200. An illegal quantity, in this line of BASIC, can only occur if SA+T is negative or above 65535, or if A is negative or above 255. In fact, I see from your printout that you've typed CO (both letters) rather than C0 (letter then zero), and this is causing your problem, because this won't convert properly to decimal.

With the graphics, and any other, programs, CCI's people won't want to retype your programs to test them; why should they repeat what you've already done? In any case, your printout may be too faint/ the wrong size/ etc. But thanks anyway.

Dear Rae,
'I purchased a Commodore 64 earlier this year, and with it a book by Spencer Bateson. As I have a keen interest in music I copied out a program to make the keyboard's top two rows into a synthesiser. I attach a photocopy of the program. On running, I find it will not work. The top row of keys appear to be notes at random, and the second row all play the same note. The publishers tell me the author has left the country. Can you help?

Also, as I have a midi-compatible keyboard and an interface for the 64, is there any addition to the program that would enable me to use the programme via my keyboard?'
C. Potter, St Albans.

This time the listing is photocopied from the book, so I have no way of telling whether your version has been correctly entered. The program (not 'programme' — accepted spelling omits 'me') seems to convert one keypress into a note: lines like IF KB+56 THEN K+1: GOTO 250 convert values read from the keyboard into numbers from 0 to 15, and then a corresponding note is poked into the SID chip, in two (high) and low) bytes. It appears to be a simple program to play one note only at a time, since only one note only at a time, since only one SID voice is used. You should check your program. The publishers of your book are in fact American, so the author probably has never been here. (You may like to know that my book 'Programming the Commodore 64' has several sound programs, including a 3-voice keyboard and a music player program using fairly conventional notation. Details on 0403-710971).

The SID audio output line can certainly be fed into other devices, but it is a simple signal, not MIDI-encoded; so the answer to your question depends on what your interface does.

Dear Rae,
'I have been trying in vain for the past ten months to get hold of an interface for my Commodore 64 and Silver Reed EX43N. Please can you help.
Cpl. D. Dishman, RAF Bruggen.

Try Microport in Borehamwood on 01-953 8385.

Dear Rae,
'In November CCI you said you'd sent Mr Fletcher a copy of a diagram showing graphic combinations available with the C64. Could you post me a copy? I would find it very helpful. I don't know how to put sprites higher than 16320 in memory'.
J. Bradby, Coatbridge.

Yes — to do this you have to alter the way the VIC chip is connected to memory. It can be wired in 4 different ways, but the subject is too complex to fit here.

Dear Rae,
'I am thinking about buying an Enhancer 2000 disk drive. Unfortunately I do not know too much about the technical side of the C64. Do the disk and utilities designed for the 1541 work properly with the Enhancer 2000?'
G.A. Robson, South Shields.

I don't want to comment on specific products; the simple test with a disk drive is will it accept ordinary 1541 disks — i.e. 5 1/4 inch floppies, and respond in the same was as a 1541? (Or, for 128 owners, like a 1571?) If not, you'll be able to use it for storage of your own programs, but will have to use tape software otherwise. The problem is that Commodore disk drives are 'intelligent' — they have their own chips inside, with programs which process the commands they receive; so a 'clone' disk-drive would need similar software — but without infringing Commodore's copyright, and at a significantly lower price.

Dear Rae,
'Is it possible to use a 1551 disk drive with a C64? I appreciate the serial buses are different, but could I not simply cut the end from the 1551's cable and replace it with a 6-DIN Plug? If so would the 64's BASIC need to be modified, as its disk handling is slightly different to that of the Plus/4?.

Finally, how about using a 1541 with a Plus/4?'
Sue Field, Conventry.
PS-I think your page is the best in the magazine.

The problem is that the 1551 uses parallel data, while the 64 uses a (slower) serial bus. So a simple rewire won't work — to use a 1551 with a C64, you'd need an interface to interconvert parallel and serial data, i.e. to take each 8 bits of parallel data, and probaly RAM to store intermediate data. Thanks for your nice comment!

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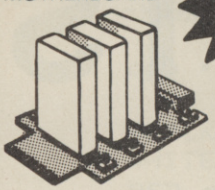

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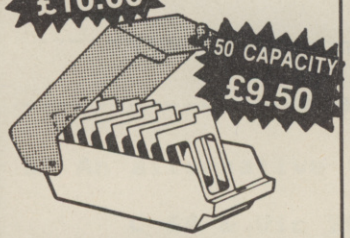

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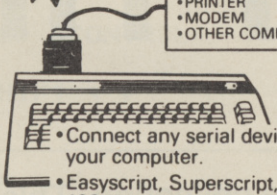

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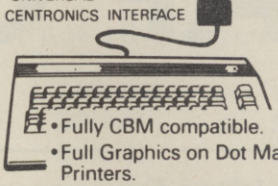

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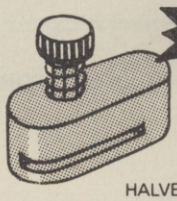

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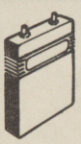

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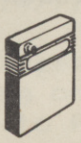

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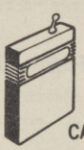

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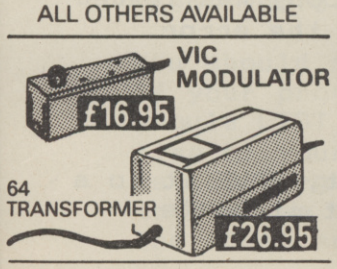

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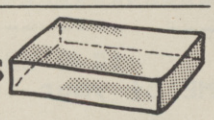

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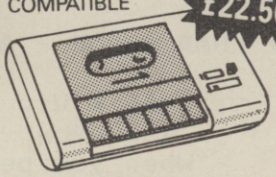

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A HEAP OF HINTS

A few more ideas for your routine collection. This month concentrates on ideas for BASIC users.

---

1) An alternative to using large FOR/NEXT loops as time delays:

C-64 & Vic 20

```
POKE 161,0:WAIT 161,D
```

Where D = 1, 2, 4, 8, 16, 32, 64 or 128.
As a rough guide, multiplying D by four will give you the approximate time delay in seconds.

---

2) A way to suppress the '?' INPUT prompt:

C-64 & Vic 20

POKE 19,1 - immediately before the INPUT and POKE 19,0 after.

E.g.
```
10 POKE 19,1
20 INPUT "PLEASE ENTER YOUR NAME";N$
30 POKE 19,0
```

---

3) LOAD ERROR - A way of recovering SOME of your lost tape programmes:

C-64 & Vic 20

When you perform a SAVE to tape your programme is in fact saved twice. When you then LOAD the programme it loads in the first copy and then compares it with the second. If the two copies do not match byte for byte you get that lovely message 'LOAD ERROR'. However, all may not be lost. As long as the first copy has loaded successfully it may be possible to recover it. When the error message appears, type in:

```
POKE 45,PEEK(831):POKE 46,PEEK(832): CLR
```

LIST it, (don't RUN it yet) and if reasonably intact, SAVE it to a new tape. This new version may need some editing but it beats typing it all in again. Doesn't it?

---

4) Multi-coloured listings:

C-64

At each point in your listing where you would like the colour to change add the following line:

REM ""{DELETE} {CONTROL + 9} {SHIFT + M} {colour - see table below}

BLACK	-	SHIFT + P	ORANGE	-	SHIFT + A
WHITE	-	E	BROWN	-	SHIFT + U
RED	-	£	L/RED	-	SHIFT + V
CYAN	-	C= + *	D/GREY	-	SHIFT + W
PURPLE	-	C= + -	M/GREY	-	SHIFT + X
GREEN	-	^	L/GREEN	-	SHIFT + Y
BLUE	-	CRSR LEFT	L/BLUE	-	SHIFT + Z
YELLOW	-	SHIFT + ^	L/GREY	-	SHIFT + +

The 'C=' represents the Commodore Logo key.

---

5) An alternative to GET

C-64 & Vic 20

Another way to test what keys are pressed is by the use of memory location 197. Try this small programme:

```
10 PRINT CHR$(147); PEEK(197): GOTO 10
```

A number will appear at the top of the screen. This number will change depending on what key you press. By noting these numbers it is possible to PEEK(197) in place of GET. E.g.

```
10 A = PEEK(197): IF A = 64 THEN 10  : REM 64 = NO KEY PRESSES
20 IF A = 1 THEN END                 : REM 1  = VALUE FOR RETURN KEY
30 IF A = 51 THEN PRINT "CLR"        : REM 51 = VALUE FOR CLR KEY
40 PRINT A: GOTO 10
```

---

6) Temporary relief for the OLD:

C-64

If you have just NEWed a programme by mistake a quick poke can provide you with a temporary fix.

```
POKE 2050,8
```

Then type 0 (zero) and ENTER

You should now be able to list your programme. DO NOT RUN IT! If your programme is short enough to fit on the the screen you should LIST it, enter NEW and then put the cursor over each line of your listing and ENTER it. However, if the programme is too large to fit on the screen you will probably need to resort to the use of a machine code monitor or a few judicious pokes in the 45-46 area.

Timing the '64

For reasons of interest or necessity, programmers using Machine Code will, from time to time, attempt to estimate the running time of particular programmes or subroutines. All too often the results will be disappointing for carefully estimated times will be found to be exceeded in practice by errors of approaching 10% on the anticipated running time. The Commodore Programmers' Reference Manual is silent on the subject; other Reference Books are often

This is a very interesting and highly professional examination of the internal working of a 64 by G. D. Royle

vague — sometimes quite incorrect. The cycle time has been quoted assertively at ½ microsecond — and in other books 1 mocrosecond — the truth cannot readily be ascertained.

The necessity of an accurate assessment of running time is for specific programmes which may be used in real time applications linked to external input/output, or it may simply be critical to complete a particular operation during one complete Raster Scan: it is this latter case that has led to the production of this article.

The particular problem has been in connection with the smooth scrolling of a High Resolution Screen, Pixel by Pixel. This involves a very fast Interrupted transfer of some 8000 Characters at a time to new locations in memory — and the whole operation must be linked to, and synchronised with, Raster Scanning.

In order to arrive at the real facts, a suite of investigative programmes has been written and the results are explained below.

First, a brief explanation of the TV display. This is generated by a spot of light which starts at the top left corner of the screen, moves at constant speed to the top right hand corner to complete the top line, moves down one Pixel space to the left of the next line and so on until 312 lines have been completed. It then rapidly returns to the top left and repeats the process. The U.K. Television Standard is 50 frames, or Rasters per second, which leads to a nominal Raster time of 20 milliseconds with a line time of about 64 microseconds — that looks a familiar number (but don't jump to conclusions yet!).

The first problem is therefore carfully to check the actual time interval between the starts of each Raster and this can easily be done to a very high degree of accuracy — at least on part in 10,000 —by the use of a simple machine code programme which counts the number

of completed rasters in a long period of time — say 4000 seconds — started and stopped against the second hand of a watch. As will be clear later, it is essential that the machine code instruction 'SEI' (Interrupt Disable) is set at the start, and the programme stopped by 'RUN/STOP' and 'RESTORE'. (Note that 'SEI' also disables the Jiffy Clock).

As fully explained in Commodore and other manuals, the Raster Count of 312 is carried out in Location 53266 with the MSB as Bit 7 in 53265. Line 0 is at the top of the screen. Line 255 just below the visible area,after which Bit 7 of 53265 is set to 1 and 53266 counts from 0 to 55 before both Registers are reset to zero for the start of the next Raster. It is important to note that the Raster Count runs continuously whether or not either or both SEI is set and the Screen is blanked off by amending the contents of Bit 4 of 53265.

The result of such a test, which could very fractionally from Commodore 64 to Commodore 64 dependent on the exact frequency of the 'DOT CLOCK' shown in the Commodore Block Diagram as nominally 7.88MH (U.K. machines), is a complete Raster Time of 19,96 milliseconds, which is in close accord with the TV standard.

It was next reasonable to assume that a programme which stored the contents of register 53266 sequentially, with a precise 64 cycle loop time, would display sequential line numbers. It was noted with surpise that this was not true — at intervals of 64 lines a number was missed with unfailing regularity, indicating that the loop time must be reduced. Similarly, a loop time of 62 duplicated numbers with similar regularity.

A loop time of 63 cycles exactly was found to be in perfect synchronism for as long as it was left to run; this proves that the interval between Raster Lines is 63 cycles, not the 64 expected. Thus, there are 63 x 312 cycles in a complete Raster interval, i.e. 19656 cycles, which leads to the calculation of cycle time at 19960/19656 or 1.016 microseconds.

This correalates closely with the 'DOT CLOCK' frequency of 7.88MH. A 'divide by eight' on this produces 985kH, which is a cycle time period of 1.015 microseconds and a Raster time of 19.95 milliseconds.

Similar synchronous techniques can be applied to the determination of the total cycle time of 'Non maskable Interrupts' (NMI's) and the ordinary Commodore Service Routine IRQ's. Without giving the detail of the tests the following are the results.

The NMI's, which are regularly implemented provided the Screen is not blanked off by 53265 Bit4, occur on every eighth line of the visible display (and identify the Standard Mode print line); i.e. they occur at line 51,59, etc through to 243; 25 times in all. Each interrupt lasts for 28 cycles exactly and therefore in a complete Raster 700 cycles are NOT available for use by User Programme. With normal IRQ's disabled by SEI, there are therefore only 18956 cycles available and the average effective cycle time (ECT) is 1.053 microseconds.

This demonstrates quantitatively the Note on page 150 of the Commodore P.R. Guide — 'Turning off the Screen will speed up the processor slightly' — actually by about 4%. In the light of what

CONTINUED....

APPENDIX 1. COMMODORE 64 TIMINGS

INTERVAL	CYCLES	LINES	TIME microseconds	TIME milliseconds
Cycle Time	1	—	1.02	—
1 Raster Line	63	—	63.96	(See Note (a))
1 Raster	19656	312	—	19.96
NMI's per 8 visible lines	28	—	28.5	—
Per Raster	700	—	710.5	—
IRQ Interval	16422	260⅔	—	16.67
IRQ Length	218	3.46	221.3	—
Av. ECT's:—				
Standard Mode			1.07	
SEI Set			1.05	
Screen Blanked			1.03	
SEI & Screen off			1.02	
Standard Mode over one Raster period			1.06 to 1.08	
Standard Mode 5 cycle loop			Best 1.02 Worst 51.0	(See Note (b))

Note (a) Except for lines 311 and 0 which are present for 64 and 62 Cycles respectively.
(b) Bracketing NMI and IRQ.

APPENDIX 2. IRQ DEMONSTRATION PROGRAMME

load at 49152. Call SYS49152. Running time 6m 19sec.
Results in 49408 through 49663.

```
DATA169,11,141,17,208,160,0,162,0,165,162,133,251,165,162,197,251,240,250,232
DATA224,117,208,241,173,18,208,153,0,193,200,208,230,169,27,141,17,208,96
```

Sum Check 5907

Timing the '64

CONTINUED

follows later, it is important to note that each NMI only lasts for 28 cycles of the 63 cycles that a particular line number is available in 53266. Thus a short loop programme which looks for a particular line number in 53266 will not miss a stimulus due to the NMI.

This leads to an interesting and demonstrable phenomenon. If a simple fast counting loop starting and stopping six Raster lines apart is triggered to start in the non-visible area of the screen, e.g. starting at line 0 (SEI set), it counts consistent with a cycle of 1.02 microseconds.

If it runs between NMI's e.g. starts at line 60, it again runs at a cycle time of 1.02 microseconds. If it straddles an interrupt, e.g. starts at line 58, then it loses 28 cycles of running time, giving an average Effective Cycle Time (ECT) of 1.10 microseconds — i.e. 8% slower. In a worse case, under a particular circumstamce, a loop of 28 cycles can effectively run at half speed and take 56 cycles to complete!

This perhaps explains some of the silence in Publications in regard to cycle time — it can be very dependent on circumstances.

Similarly IRQ's occur at intervals of 16,422 cycles (59.98 interrupts per second — i.e. the Jiffy Clock) and last for a much more serious time, 218 cycles or about 3½ Raster lines each time. This means that interrogation of any line number in 53266 can be missed occassionally and cause, for example, flicker in a scrolled display, unless special action is taken. Also, even more seriously, there can be two interrupts 1/60 second apart in one complete Raster interval of 1/50 second and 436 cycles can be lost to the programmer. This can lead to a total loss of processing time, with the NMI's, of 1136 cycles in a single Raster of 19,956 cycles — 6% of the available processor time.

A Summary of the relevant performance figures is given in Appendix 1.

This demonstrates therefore that if better than, say, 10% accuracy is required in the calculation of programme running time, then a detailed knowledge of Interrupt Timings and their significance are required. Selective Screen Blanking also calls on similar knowledge.

An interesting extension of the synchronous techniques described is the application of similar priciples to simple programmes which can accurately check M.C. Programme running times correct to one cycle.

In conclusion, it may be deduced from App.1 that the total time taken by 468 Interrupts is precisely the same as for 391 complete Rasters. The Data for a short programme to demonstrate this is given in Appendix 2.

This programme records the Raster Line number (LSB only) at the end of each 117 Interrupt, i.e. 97¾ Rasters, storing the information in registers 49408 through 49663 consecutively, at approximately 2 second intervals. The results show that every fourth line number is identical with each line number precessing by a ¼ Raster - 78 lines. The programme takes 8 min. 19 secs. to run and demonstrates conclusively the perfect synchronism between the IRQ's and the Raster Count in 53266.

G.D.R.

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Commodore 1900 12in Mono Monitor for C64/128	115.00
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C64 Official Programmer's Ref Guide (p&p £2)	7.95
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Horasoft 50/40 Column Switch for C128	11.26
The Anatomy of a Commodore 64	5.95
Machine Language Book for the C64	5.95
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AMIGA Software	PHONE
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Program

C64

POINTER

by John Picking

This programme gives the 64 an Amiga like pointer. It has the facility to restrict its movement to certain areas, can be made to flash and will return to its location when the fire button is pressed.

```
10 REM *** JOYSTICK DRIVEN POINTER ***
20 CLR
30 GOSUB 280 : REM CALL THIS SUBROUTINE TO SETUP POINTER
40 :
50 :
60 :
70 REM *** SAMPLE PROGRAM ***
80 PRINT CHR$(147);
90 PRINT:   PRINT " FLASH ON." : PRINT : PRINT " FLASH OFF"
100 PRINT: PRINT " FASTER..." : PRINT : PRINT " SLOWER..."
110 PRINT: PRINT " QUIT....." : PRINT
120 PRINT " MOVE POINTER AND PRESS TO SELECT..."
130 PT=0:PB=11:PL=0:PR=11:PS=2:PF=1:GOSUB 440 :REM SET LIMITS ETC.,
                                                        TURN ON
140 WAIT 49458,1 :REM WAIT FOR FIRE BUTTON PRESS
150 X=PEEK(253) : Y=PEEK(254) :REM READ X & Y COORDS
160 IF X<1 OR X>10 THEN 140
170 ON (Y+1)/2 GOSUB 180,190,200,220,240 : GOTO 140
180 PF=1 : GOSUB 440 : RETURN
190 PF=0 : GOSUB 440 : RETURN
200 IF PS<7 THEN PS=PS+1 : GOSUB 440 : RETURN
210 RETURN
220 IF PS>1 THEN PS=PS-1 : GOSUB 440 : RETURN
230 RETURN
240 END
250 :
260 :
270 :
280 REM *** SETUP POINTER ***
290 PRINT "PLEASE WAIT..."
300 FOR I=0 TO 62 : READ X : POKE 704+I,X : NEXT I : REM SPRITE DATA
310 REM *** DATA LOAD AND CHECK ROUTINE ***
320 L=49154
```

```
330 FORX=0TO20:T=0:FORY=0TO14
340 READ A:POKE L,A:L=L+1:T=T+A:NEXT
350 READ A:T=T-(INT(T/256)*256)
360 IF T<>A THEN PRINT"DATA ERROR IN LINE"680+(X*10)"CHECKSUM <>"A:STOP
370 PRINT680+(X*10)"OK":NEXT
380 REM
390 POKE 2040,11 : POKE 53248,24 : POKE 53249,50 : POKE 53264,0
400 POKE 53287,1 : POKE 53276,1 : REM SETUP SPRITE
410 RETURN
420 :
430 :
440 REM *** SET LIMITS,SPEED,FLASH AND TURN ON ***
450 IF PT=0 THEN POKE 49452,50 : GOTO 470
460 POKE 49452,49+(PT*8)
470 POKE 49453,49+(PB*8)
480 IF PL=0 THEN POKE 49454,24 : POKE 49455,0 : GOTO 500
490 PX=23+(PL*8) : POKE 49454,PX AND 255 : POKE 49455,INT(PX/256)
500 PX=23+(PR*8) : POKE 49456,PX AND 255 : POKE 49457,INT(PX/256)
510 POKE 252,PF : POKE 53287,1
520 POKE 251,PS : POKE 53269,1 : SYS 49154
530 RETURN
540 :
550 :
560 REM *** SPRITE DATA ***
570 DATA 170,160,000,170,144,000,170,144
580 DATA 000,170,160,000,170,168,000,150
590 DATA 170,000,085,170,128,065,106,128
600 DATA 000,090,064,000,021,064,000,005
610 DATA 0,0,0,0,0,0,0,0
620 DATA 0,0,0,0,0,0,0,0
630 DATA 0,0,0,0,0,0,0,0
640 DATA 0,0,0,0,0,0,0
650 :
660 :
670 REM ***M/C DATA***
680 DATA 169,049,234,141,000,192,169,234,234,141,001,192,120,169,042, 039
690 DATA 141,020,003,169,192,141,021,003,088,096,120,173,000,192,141, 220
700 DATA 020,003,173,001,192,141,021,003,088,096,024,173,039,208,101, 003
710 DATA 252,141,039,208,173,000,220,041,001,208,028,173,044,193,205, 134
720 DATA 001,208,144,009,173,044,193,141,001,208,076,118,192,173,001, 146
730 DATA 208,229,251,141,001,208,076,118,192,173,000,220,041,002,208, 020
740 DATA 025,173,001,208,205,045,193,144,009,173,045,193,141,001,208, 228
750 DATA 076,118,192,173,001,208,101,251,141,001,208,173,000,220,041, 112
760 DATA 004,208,049,056,173,046,193,237,000,208,173,047,193,237,016, 048
770 DATA 208,144,015,173,046,193,141,000,208,173,047,193,141,016,208, 114
780 DATA 076,228,192,173,000,208,229,251,141,000,208,173,016,208,233, 032
790 DATA 000,141,016,208,076,228,192,173,000,220,041,008,208,047,056, 078
800 DATA 173,000,208,237,048,193,173,016,208,237,049,193,144,015,173, 019
810 DATA 048,193,141,000,208,173,049,193,141,016,208,076,228,192,024, 098
820 DATA 173,000,208,101,251,141,000,208,173,016,208,105,000,141,016, 205
830 DATA 208,056,173,000,208,233,024,141,051,193,173,016,208,233,000, 125
840 DATA 074,173,051,193,106,074,074,133,253,056,173,001,208,233,050, 060
850 DATA 074,074,074,133,254,169,000,141,037,208,173,000,220,041,016, 078
860 DATA 208,018,173,050,193,208,018,169,001,141,050,193,169,001,141, 197
870 DATA 037,208,076,041,193,169,000,141,050,193,108,000,192,000,000, 128
880 DATA 000,000,000,000,000,000,000,000,000,000,000,000,000,000,000, 000

READY.
```

Program

SYMDIS

BY MARK TWELLS

C-64

Symdis is a 2 pass labelling disassembler. It can disassemble a programme and then send the output to Screen, Printer or Disk. It has an inbuilt Centronics routine. It was once released as a commercial programme and so should be bug free.

```
10 REM SYMDIS BY MARK  TWELLS
20 REM
30 OPEN 5,8,5,"SYMDIS,P,W":PRINT£5,CHR$(1);CHR$(8);
40 IF ST<>0 THEN 120
50 FOR X=0 TO 264:T=0:FOR Y=0 TO 14
60 READ A:IF A<0 OR A>255 THEN 130
70 PRINT£5,CHR$(A);:IF ST <>0 THEN 120
80 T=T+A:NEXT:READ A:T=T-(INT(T/256)*256):IF T<>A THEN 130
90 PRINT 190+(X*10)"OK":NEXT
100 CLOSE5:PRINT"SUCCESSFULLY CREATED SYMDIS"
110 PRINT"TO USE LOAD & TYPE 'RUN'":END
120 PRINT"DISK ERROR!":CLOSE5:GOTO 150
130 PRINT"DATA ERROR IN LINE"190+(X*10);
140 PRINT"CHECKSUM <>"A:CLOSE5
150 OPEN15,8,15,"S0:SYMDIS":CLOSE15:END
160 REM
170 REM MACHINE CODE
180 REM
190 DATA 013,008,010,000,158,040,050,048,054,051,041,000,000,000,032,  249
200 DATA 237,255,224,022,208,003,169,255,044,169,000,141,111,022,169,  237
210 DATA 000,133,251,169,096,133,252,169,000,133,253,169,112,133,254,  209
220 DATA 186,134,040,032,231,255,169,032,162,024,157,208,018,202,208,  010
230 DATA 250,169,192,032,144,255,162,000,142,109,022,142,110,022,142,  101
240 DATA 120,022,138,157,125,023,202,208,250,162,000,142,239,018,232,  246
250 DATA 142,238,018,169,060,141,237,018,032,106,019,147,005,018,000, 070
260 DATA 169,006,141,032,208,141,033,208,162,022,044,111,022,048,002, 069
270 DATA 162,040,032,063,018,169,018,032,037,022,044,111,022,048,005, 055
280 DATA 162,018,032,063,018,032,106,019,142,083,089,077,068,073,083, 041
290 DATA 032,086,049,046,051,032,091,070,049,047,051,047,053,093,032, 061
300 DATA 095,013,013,000,044,111,022,048,005,162,009,032,063,018,032, 155
310 DATA 106,019,032,032,032,032,032,077,046,084,087,069,076,076,083, 115
320 DATA 032,049,057,056,054,013,080,085,066,076,073,067,032,068,079, 119
330 DATA 077,065,073,078,032,083,079,070,084,087,065,082,069,045,045, 010
340 DATA 080,076,069,065,083,069,032,080,065,083,083,032,079,078,013, 219
350 DATA 000,024,162,010,160,010,032,240,255,032,106,019,154,117,099, 140
360 DATA 099,099,099,099,099,099,099,099,099,099,099,099,099,099,099, 205
370 DATA 099,099,105,000,024,162,011,160,010,032,240,255,032,106,019, 074
380 DATA 098,070,049,032,045,032,068,073,083,065,083,083,069,077,066, 225
390 DATA 076,069,032,032,098,000,024,162,012,160,010,032,240,255,032, 210
400 DATA 106,019,098,070,051,045,032,069,088,073,084,032,032,032,032, 095
410 DATA 032,032,032,032,032,032,098,000,024,162,013,160,010,032,240, 163
420 DATA 255,032,106,019,098,070,053,032,045,032,076,079,065,068,032, 038
430 DATA 080,082,071,032,070,073,076,069,098,000,024,162,014,160,010, 253
440 DATA 032,240,255,032,106,019,106,099,099,099,099,099,099,099,099, 046
450 DATA 099,099,099,099,099,099,099,099,099,099,107,000,024,162,017, 020
```

```
460 DATA 160,008,032,240,255,032,106,019,158,042,042,069,078,084,069, 114
470 DATA 082,032,089,079,085,082,032,067,072,079,073,067,069,032,078, 250
480 DATA 079,087,042,042,005,013,062,062,062,087,072,069,078,032,076, 100
490 DATA 073,083,084,073,078,071,032,084,079,032,084,072,069,032,083, 005
500 DATA 067,082,069,069,078,044,032,089,079,085,032,077,065,089,013, 202
510 DATA 080,065,085,083,069,032,084,072,069,032,076,073,083,084,032, 251
520 DATA 066,089,032,080,082,069,083,083,073,078,071,032,060,083,080, 037
530 DATA 065,067,069,062,013,000,024,162,001,160,021,044,111,022,048, 101
540 DATA 002,160,039,032,240,255,169,000,133,204,133,198,032,228,255, 032
550 DATA 240,251,201,133,240,012,201,134,208,001,096,201,135,208,217, 174
560 DATA 076,151,021,032,106,019,147,018,000,032,106,019,070,049,032, 110
570 DATA 032,032,068,073,083,065,083,083,069,077,066,076,069,000,044, 152
580 DATA 111,022,048,003,162,024,044,162,006,032,063,018,032,106,019, 084
590 DATA 013,013,017,083,084,065,082,084,032,065,068,068,082,069,083, 140
600 DATA 083,032,032,061,036,000,032,255,019,133,107,134,106,032,106, 144
610 DATA 019,013,069,078,068,032,065,068,068,082,069,083,083,032,032, 093
620 DATA 032,032,061,036,000,032,255,019,133,026,134,025,032,106,019, 174
630 DATA 013,013,083,089,077,066,079,076,032,084,065,066,076,069,058, 178
640 DATA 013,083,084,065,082,084,032,061,036,000,165,252,166,251,032, 126
650 DATA 025,018,032,106,019,157,157,157,157,000,032,255,019,133,252, 239
660 DATA 134,251,032,106,019,013,032,032,069,078,068,032,061,036,000, 195
670 DATA 165,254,166,253,032,025,018,032,106,019,157,157,157,157,000, 162
680 DATA 032,255,019,133,254,134,253,162,106,160,025,032,179,020,048, 020
690 DATA 003,076,049,008,169,000,141,117,022,141,118,022,032,106,019, 255
700 DATA 013,073,078,067,076,085,068,069,032,072,069,088,063,040,089, 214
710 DATA 047,078,041,058,032,032,078,157,000,032,023,020,173,000,002, 005
720 DATA 201,089,240,004,201,121,208,005,169,128,141,117,022,032,106, 248
730 DATA 019,013,073,078,067,076,085,068,069,032,065,083,067,073,073, 173
740 DATA 063,040,089,047,078,041,058,078,157,000,032,023,020,173,000, 131
750 DATA 002,201,089,240,004,201,121,208,005,169,128,141,118,022,032, 145
760 DATA 106,019,013,079,085,084,085,085,084,032,084,079,045,045,045, 197
770 DATA 013,013,049,041,068,073,067,067,013,050,041,083,067,082,069, 044
780 DATA 069,078,013,051,041,080,082,073,078,084,069,082,013,145,145, 079
790 DATA 145,000,032,023,020,169,147,032,037,022,173,000,002,201,050, 029
800 DATA 208,020,169,005,162,003,160,000,032,186,255,169,000,032,189, 054
810 DATA 255,032,192,255,076,222,012,201,051,240,003,076,117,012,032, 240
820 DATA 106,019,040,080,041,065,082,065,076,076,069,076,032,079,082, 220
830 DATA 032,040,067,041,079,077,077,079,068,079,082,069,032,080,082, 216
840 DATA 073,078,084,069,082,032,063,032,080,157,000,032,023,020,173, 230
850 DATA 000,002,201,080,208,011,169,128,141,110,022,169,004,133,186, 028
860 DATA 208,004,201,067,208,189,032,106,019,013,072,069,065,068,073, 114
870 DATA 078,071,063,032,000,032,023,020,162,000,189,000,002,240,013, 157
880 DATA 157,208,018,232,224,024,208,243,044,110,022,048,089,032,106, 229
890 DATA 019,013,080,082,073,078,084,069,082,032,077,079,068,069,063, 200
900 DATA 040,049,061,085,080,080,069,082,044,050,061,076,079,087,069, 244
910 DATA 082,041,013,049,157,000,032,023,020,173,000,002,041,015,240, 120
920 DATA 211,201,003,176,207,201,001,208,003,169,000,044,169,007,072, 136
930 DATA 169,000,032,189,255,104,168,162,004,169,005,032,186,255,032, 226
940 DATA 192,255,144,003,076,084,021,162,005,032,201,255,076,222,012, 204
950 DATA 201,049,240,003,076,243,010,169,000,032,189,255,169,015,162, 021
960 DATA 008,160,015,032,186,255,032,192,255,032,016,021,032,106,019, 081
970 DATA 013,070,073,076,069,078,065,077,069,032,058,000,032,023,020, 243
980 DATA 160,255,200,185,000,002,208,250,162,000,189,124,022,153,000, 118
990 DATA 002,232,200,224,004,208,244,152,162,000,160,002,032,189,255, 018
1000 DATA 169,005,162,008,160,005,032,186,255,032,192,255,144,003,076, 148
1010 DATA 084,021,032,016,021,162,005,032,201,255,144,003,076,084,021, 133
1020 DATA 165,106,133,101,165,107,133,102,165,251,133,108,165,252,133, 171
1030 DATA 109,162,000,161,101,032,208,020,165,097,176,078,201,045,208, 227
1040 DATA 070,160,001,177,101,048,036,024,101,101,160,000,145,108,165, 117
1050 DATA 102,105,000,200,145,108,136,177,108,024,105,002,145,108,200, 129
```

```
1060 DATA 169,000,113,108,145,108,169,001,133,098,076,105,013,133,098,189
1070 DATA 169,254,056,229,098,133,098,165,101,056,229,098,160,000,145,199
1080 DATA 108,165,102,233,000,200,145,108,076,032,013,165,098,144,002,055
1090 DATA 169,000,133,098,162,002,228,098,208,027,160,002,177,101,136,165
1100 DATA 017,101,240,063,160,001,177,101,136,145,108,160,002,177,101,153
1110 DATA 136,145,108,024,032,137,019,165,097,074,074,162,004,221,161,023
1120 DATA 013,240,005,202,016,248,048,010,160,001,177,101,170,169,128,152
1130 DATA 157,125,023,032,072,018,133,101,132,102,162,101,160,025,032,095
1140 DATA 179,020,016,016,076,238,012,169,128,141,120,022,076,108,013,054
1150 DATA 001,003,004,005,008,032,204,255,032,106,019,147,080,076,069,017
1160 DATA 065,083,069,032,087,065,073,084,046,046,046,083,079,082,084,000
1170 DATA 073,078,071,032,083,089,077,066,079,076,083,000,165,109,133,190
1180 DATA 037,165,108,133,036,160,000,152,145,108,200,145,108,056,165,182
1190 DATA 036,229,251,133,027,165,037,229,252,133,028,070,028,102,027,211
1200 DATA 165,028,208,010,165,027,201,001,240,115,201,000,240,111,072,248
1210 DATA 138,072,152,072,165,251,166,252,133,029,134,030,133,031,134,100
1220 DATA 032,169,001,133,034,169,000,133,035,165,031,024,105,002,133,142
1230 DATA 031,144,002,230,032,160,002,136,177,029,209,031,208,041,152,048
1240 DATA 208,246,165,031,166,032,133,029,134,030,230,034,208,002,230,086
1250 DATA 035,165,034,197,027,208,213,165,035,197,028,208,207,006,033,222
1260 DATA 176,183,104,168,104,170,104,076,105,014,144,216,160,255,200,131
1270 DATA 177,029,072,177,031,145,029,104,145,031,192,001,208,241,169,215
1280 DATA 128,133,033,048,193,169,147,032,037,022,173,110,022,141,109,217
1290 DATA 022,208,011,162,005,032,201,255,165,186,201,004,208,009,032,165
1300 DATA 157,018,032,114,018,076,199,014,032,106,019,059,083,089,077,069
1310 DATA 066,079,076,073,067,032,068,073,083,065,083,083,069,077,066,036
1320 DATA 076,069,082,032,086,049,046,049,000,032,114,018,032,106,019,042
1330 DATA 059,032,032,032,032,077,046,084,087,069,076,076,083,032,049,098
1340 DATA 057,056,054,000,160,002,032,107,018,032,106,019,059,045,045,024
1350 DATA 080,065,071,069,032,090,069,082,079,032,076,065,066,069,076,253
1360 DATA 083,058,013,000,032,104,015,162,000,189,125,023,016,037,138,227
1370 DATA 072,032,106,019,090,080,000,104,072,032,029,018,162,004,032,084
1380 DATA 143,020,032,106,019,061,036,000,104,072,032,029,018,032,114,050
1390 DATA 018,032,237,019,104,170,232,208,211,160,002,032,107,018,032,046
1400 DATA 106,019,059,045,045,065,066,083,079,076,085,084,069,032,032,177
1410 DATA 032,076,065,066,069,076,083,058,013,000,032,104,015,044,120,085
1420 DATA 022,016,021,032,106,019,076,048,048,048,048,032,032,032,061,129
1430 DATA 036,048,048,048,048,000,032,114,018,165,251,133,108,165,252,186
1440 DATA 133,109,160,000,177,108,133,079,200,177,108,133,080,005,079,145
1450 DATA 208,041,076,209,015,165,186,201,008,240,028,032,114,018,169,174
1460 DATA 059,032,037,022,162,020,169,163,044,109,022,016,002,169,095,097
1470 DATA 032,037,022,202,208,241,076,114,018,096,032,196,019,162,106,025
1480 DATA 160,079,032,179,020,048,015,165,079,005,080,240,009,032,055,174
1490 DATA 019,032,237,019,076,139,015,165,108,072,165,109,072,032,196,176
1500 DATA 019,240,015,162,025,160,079,032,179,020,016,242,032,055,019,015
1510 DATA 076,172,015,104,133,109,104,133,108,160,000,177,108,133,079,075
1520 DATA 200,177,108,133,080,165,106,133,101,165,107,133,102,032,114,064
1530 DATA 018,169,042,032,037,022,162,007,032,143,020,032,106,019,061,134
1540 DATA 036,000,032,054,018,032,114,018,165,186,201,004,208,063,044,151
1550 DATA 117,022,016,018,032,106,019,065,068,068,082,032,032,079,080,068
1560 DATA 032,032,032,032,032,032,000,032,106,019,076,065,066,069,076,189
1570 DATA 032,032,077,078,069,077,079,078,073,067,032,032,032,032,000,022
1580 DATA 044,118,022,016,009,032,106,019,065,083,067,073,073,000,032,247
1590 DATA 114,018,032,114,018,032,098,016,032,177,016,165,186,201,003,198
1600 DATA 240,010,169,005,032,195,255,144,003,076,084,021,032,016,021,023
1610 DATA 032,114,018,032,231,255,169,000,141,109,022,076,106,021,096,142
1620 DATA 032,226,016,044,118,022,016,071,173,119,022,016,004,162,005,022
1630 DATA 208,018,074,074,168,190,131,022,044,121,022,016,007,169,000,240
1640 DATA 141,121,022,162,006,032,143,020,169,059,032,087,018,160,000,148
1650 DATA 177,101,166,186,224,008,208,004,201,123,176,012,201,032,144,171
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Program

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1660 DATA 008,201,128,144,006,201,160,176,002,169,032,032,087,018,196,024
1670 DATA 098,200,144,222,032,072,018,133,101,132,102,162,101,160,025,166
1680 DATA 032,179,020,048,161,032,114,018,032,204,255,032,106,019,013,241
1690 DATA 069,078,068,032,079,070,032,068,073,083,065,083,083,069,077,005
1700 DATA 066,076,089,013,000,076,084,021,032,114,018,160,000,177,101,003
1710 DATA 032,208,020,165,079,005,080,240,053,162,101,160,079,032,179,059
1720 DATA 020,048,044,240,042,032,114,018,032,106,019,059,042,042,042,132
1730 DATA 078,065,085,071,072,084,089,032,076,065,066,069,076,042,042,244
1740 DATA 042,033,033,058,000,032,114,018,032,055,019,032,196,019,076,247
1750 DATA 226,016,044,117,022,016,026,032,054,018,032,061,018,160,000,074
1760 DATA 177,101,032,029,018,196,098,200,144,246,164,098,190,128,022,051
1770 DATA 032,143,020,165,079,005,080,240,017,162,079,160,101,032,179,214
1780 DATA 020,208,008,032,091,019,162,003,076,095,017,162,008,032,143,052
1790 DATA 020,032,237,019,169,000,141,116,022,162,000,161,101,032,208,140
1800 DATA 020,144,003,076,161,020,169,000,141,116,022,165,097,074,074,002
1810 DATA 201,011,208,007,072,169,128,141,116,022,104,170,189,225,022,249
1820 DATA 133,097,152,041,143,170,152,160,003,224,138,240,011,074,144,090
1830 DATA 008,074,074,009,032,136,208,250,200,136,208,242,072,162,001,020
1840 DATA 200,162,003,192,004,144,249,104,168,185,251,022,133,099,185,053
1850 DATA 059,023,133,100,169,000,160,005,006,100,038,099,042,136,208,254
1860 DATA 248,105,063,032,087,018,202,208,236,032,061,018,162,007,224,167
1870 DATA 003,208,030,164,098,208,013,006,099,144,022,169,128,141,121,018
1880 DATA 022,169,065,208,084,177,101,044,116,022,048,028,032,029,018,139
1890 DATA 136,208,243,006,097,144,014,189,236,022,032,087,018,189,243,072
1900 DATA 022,240,003,032,087,018,202,208,201,096,032,075,018,170,232,100
1910 DATA 208,001,200,152,032,029,018,138,072,074,074,074,074,032,038,192
1920 DATA 018,104,041,015,009,048,201,058,144,002,105,006,076,087,018,164
1930 DATA 032,114,018,165,102,166,101,032,025,018,162,001,169,032,032,145
1940 DATA 087,018,202,208,248,096,165,098,056,164,102,170,016,001,136,231
1950 DATA 101,101,144,001,200,096,072,141,012,003,138,072,152,072,173,198
1960 DATA 012,003,032,037,022,104,168,104,170,104,096,032,114,018,136,128
1970 DATA 208,250,096,072,169,013,032,087,018,165,186,201,004,208,029,202
1980 DATA 206,237,018,208,024,162,006,169,013,032,087,018,202,208,248,046
1990 DATA 238,238,018,169,060,141,237,018,032,157,018,032,114,018,104,058
2000 DATA 096,032,106,019,083,089,077,066,079,076,073,067,032,068,073,012
2010 DATA 083,065,083,083,069,077,066,076,069,082,046,046,046,046,046,215
2020 DATA 046,080,065,071,069,032,000,173,239,018,172,238,018,032,240,213
2030 DATA 018,032,114,018,032,106,019,032,032,032,032,032,032,032,032,083
2040 DATA 032,032,032,032,032,032,032,032,032,032,032,032,032,032,032,224
2050 DATA 032,032,000,076,114,018,154,028,198,008,072,152,072,138,072,142
2060 DATA 186,169,128,072,160,016,056,169,000,233,128,042,201,010,144,178
2070 DATA 002,233,010,062,002,001,062,003,001,136,016,240,080,230,009,063
2080 DATA 048,032,037,022,104,016,248,104,170,104,104,040,096,138,072,055
2090 DATA 152,072,032,228,255,201,000,240,249,141,012,003,104,168,104,169
2100 DATA 170,173,012,003,096,169,076,032,037,022,166,079,165,080,032,032
2110 DATA 025,018,162,003,032,143,020,032,106,019,061,036,000,166,079,134
2120 DATA 165,080,032,025,018,032,237,019,076,114,018,032,106,019,076,025
2130 DATA 000,165,102,166,101,032,025,018,076,196,019,104,133,038,104,255
2140 DATA 133,039,160,000,230,038,208,002,230,039,177,038,240,006,032,036
2150 DATA 037,022,152,240,240,165,039,072,165,038,072,096,024,169,002,253
2160 DATA 101,108,133,108,165,109,105,000,133,109,162,108,160,253,032,250
2170 DATA 179,020,048,036,032,204,255,032,106,019,018,083,089,077,066,240
2180 DATA 079,076,032,084,065,066,076,069,032,079,086,069,082,070,076,017
2190 DATA 079,087,013,000,166,040,154,076,064,016,096,165,079,005,080,096
2200 DATA 208,001,096,032,137,019,160,000,177,108,197,079,208,007,200,093
2210 DATA 177,108,197,080,240,231,160,000,177,108,133,079,200,177,108,127
2220 DATA 133,080,165,079,005,080,096,165,198,208,001,096,169,000,133,072
2230 DATA 198,165,198,240,252,169,000,133,198,096,032,023,020,142,112,186
2240 DATA 022,169,000,133,110,169,002,133,111,032,046,020,072,032,046,073
2250 DATA 020,170,104,096,162,000,032,207,255,201,013,240,008,157,000,129
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2260 DATA 002,232,224,048,144,241,169,000,157,000,002,096,160,001,177,117
2270 DATA 110,032,101,020,032,091,020,072,136,177,110,032,101,020,032,062
2280 DATA 091,020,010,010,010,010,141,113,022,104,013,113,022,072,165,148
2290 DATA 110,024,105,002,133,110,144,002,230,111,104,096,056,233,048,228
2300 DATA 201,010,048,002,233,007,096,201,048,144,013,201,058,144,008,134
2310 DATA 201,064,144,005,201,071,176,001,096,032,106,019,013,073,078,000
2320 DATA 086,065,076,073,068,032,072,069,088,032,068,073,071,073,084,006
2330 DATA 000,076,084,021,165,154,201,003,240,009,201,004,240,005,169,036
2340 DATA 032,076,037,022,076,063,018,032,106,019,046,066,089,084,032,030
2350 DATA 036,000,160,000,177,101,032,029,018,096,181,001,217,001,000,025
2360 DATA 240,008,176,003,169,255,096,169,001,096,181,000,217,000,000,075
2370 DATA 240,004,176,244,144,239,169,000,096,168,074,144,011,074,176,167
2380 DATA 023,201,034,240,019,041,007,009,128,074,170,189,143,022,176,196
2390 DATA 004,074,074,074,074,041,015,208,011,169,000,133,098,169,128,248
2400 DATA 141,119,022,056,096,170,189,211,022,133,097,141,119,022,041,043
2410 DATA 003,133,098,024,096,115,097,116,119,101,108,108,115,165,186,048
2420 DATA 201,008,240,001,096,169,008,032,180,255,169,111,032,150,255,115
2430 DATA 032,165,255,201,048,208,008,032,165,255,201,048,208,001,096,131
2440 DATA 072,032,204,255,032,106,019,013,068,079,083,032,069,082,082,204
2450 DATA 079,082,032,035,000,104,208,003,032,165,255,032,037,022,201,007
2460 DATA 013,208,246,032,171,255,166,040,154,032,114,018,169,005,032,119
2470 DATA 195,255,169,015,032,195,255,032,231,255,032,204,255,169,000,246
2480 DATA 141,109,022,032,106,019,013,080,082,069,083,083,032,065,078,246
2490 DATA 089,032,075,069,089,032,084,079,032,067,079,078,084,073,078,016
2500 DATA 085,069,000,169,000,133,198,032,242,019,076,049,008,032,106,194
2510 DATA 019,147,018,000,032,106,019,070,053,032,032,076,079,065,068,048
2520 DATA 032,080,082,071,032,070,073,076,069,000,044,111,022,048,003,045
2530 DATA 162,023,044,162,005,032,063,018,162,004,160,003,024,032,240,110
2540 DATA 255,032,106,019,013,070,073,076,069,078,065,077,069,063,032,073
2550 DATA 000,032,023,020,162,255,232,189,000,002,208,250,138,162,000,137
2560 DATA 160,002,032,189,255,169,000,162,008,160,001,032,186,255,169,244
2570 DATA 000,032,213,255,008,032,016,021,040,144,003,076,084,021,169,090
2580 DATA 001,162,030,160,022,032,189,255,169,015,162,008,160,015,032,132
2590 DATA 186,255,032,192,255,169,015,032,195,255,076,106,021,073,032,102
2600 DATA 016,021,076,084,021,141,012,003,044,109,022,048,004,032,210,075
2610 DATA 255,096,169,255,141,003,221,169,004,141,000,221,141,002,221,247
2620 DATA 173,012,003,141,001,221,169,000,141,000,221,169,004,141,000,116
2630 DATA 221,173,013,221,041,016,240,249,169,151,141,000,221,169,063,040
2640 DATA 141,002,221,169,255,141,001,221,169,000,141,003,221,173,012,078
2650 DATA 003,096,040,101,068,133,068,152,101,041,168,202,208,231,056,132
2660 DATA 152,005,044,083,044,087,005,003,001,005,003,004,003,001,001,185
2670 DATA 009,002,005,002,002,004,064,002,069,003,208,008,064,009,048,243
2680 DATA 034,069,051,208,008,064,009,064,002,069,051,208,008,064,009,150
2690 DATA 064,002,069,179,208,008,064,009,000,034,068,051,208,140,068,148
2700 DATA 000,017,034,068,051,208,140,068,154,016,034,068,051,208,008,101
2710 DATA 064,009,016,034,068,051,208,008,164,009,098,019,120,169,000,169
2720 DATA 001,033,010,024,024,017,021,005,138,042,030,013,045,016,040,103
2730 DATA 064,034,172,166,000,196,032,072,066,064,044,041,044,035,090,096
2740 DATA 076,040,089,000,088,036,080,000,000,028,138,028,035,093,139,102
2750 DATA 027,161,157,138,029,035,157,139,029,161,029,041,025,174,105,127
2760 DATA 168,025,035,036,083,027,035,036,083,025,161,000,026,091,091,154
2770 DATA 165,105,036,036,174,174,168,173,041,000,124,000,021,156,109,202
2780 DATA 156,165,105,041,083,132,019,052,017,165,105,035,160,216,098,013
2790 DATA 090,072,038,098,148,136,084,068,200,084,104,068,232,148,144,178
2800 DATA 180,008,132,116,180,040,110,116,244,204,074,114,242,164,138,014
2810 DATA 000,170,162,162,116,116,116,114,068,104,178,050,178,000,034,032
2820 DATA 000,027,027,039,039,114,114,136,200,196,202,038,072,068,068,060
2830 DATA 162,200,000,000,254,018,000,000,000,000,000,000,000,000,000,122

READY.
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Program

FIND-128

Find what you're looking for with this machine code utility by Adrian Millett...

Human nature being what it is, it wasn't all that long after purchasing a CBM-128 that I started wishing that its very powerful Basic was even more powerful. What about a merge subroutine for combining programs and routines, or a renumber routine for subroutines only, or a genuine PROCEDURE function like the BBC (compatible with a compiler, of course!), or built in turbo-disk for the 1541, or, very important to me, a find routine! That one was very sorely missed, and in the end I had only one option:- I had to write one! For the uninitiated, a FIND command will search the program in memory and list lines containing a specified statement, variable or in fact any specified combination or characters.

With my routine, you simply type a left arrow '←' followed by what you wish to find followed by <RETURN>. If what you wish to find is within quotes, you should use a quote instead of a left arrow. In addition to this the explanation mark '!' may be used as a 'wild-card' character, so that for example if you ask the computer to search for 'n!d' it will list lines containing 'nhd', 'nod', 'ned', etc. As far as I'm aware, this is the only find utility to incorporate this feature. Perhaps the best way to explain these features is by way of a few examples:-

←a1%<RETURN> lists all lines containing the variable a1%,

←k$(<RETURN> lists all lines containing the array k$(),

←m!d<RETURN> lists lines with variables like mod, mud, mad, med, etc.

←1250<RETURN> lists all gosub/goto calls to line 1250 (a useful check if you are about to delete that line),

←rem<RETURN> lists all rem statements,

←rem ! <RETURN> lists all rems with a space immediately afterwards.

←chr$(27)<RETURN> lists all occurrences of that particular chr$ code,

"<RETURN> lists all lines with a rvs-off control code within quotes,

"and lists all lines containing the word 'and' in quotes

As you can see, the applications of this routine are almost endless. Note when using a wildcard in place of a Basic keyword that a keyword can occupy one or two bytes, and hence is equivalent to that many wildcard characters. If an explanation mark is the first character of the search string, the computer will take it as meaning literally an explanation mark, and not a wildcard. Do not use a quote as the first character of the search string, ie. '←"' because the computer will find nothing! Also if you ask for the computer to search for a variable like 'a' it will dump all lines where it occurs, even if the 'a' is part of a larger variable like 'pad$' or in a rem statement. It will not list the line if the 'a' is in quotes or if the 'a' is part of a Basic keyword. I get around the fact that it also searches rem's by starting each rem statement with a quote, which also allows upper case characters within the rem. (see my basic loader program).

Now to the program itself. I have given two listings, a Basic loader and an assembler source listing for the advanced user. To use the program, enter the Basic loader and save it on disk or tape. Now run it. If you made a mistake typing in the data statements the computer will tell you which line the error is on. If all is well, instructions will be displayed on the screen, and then the computer will ask you if you wish to 'Save to Disk, Tape or End (d,t,e) ?'. If you select 'e', the routine will be in memory, ready to use once you've initialised it by typing the sys-number displayed on the screen (usually sys 4864 <RETURN>. However, if you select 'd' or 't' the computer will save a machine-code file on disk or tape. The filename will contain the sys-number in brackets, ie. "find128. (4864). This file has the advantage of being much shorter, and you may load and initialise it without destroying the Basic program you have in memory using the BLOAD command. If you are using tape there is a problem here, since the BLOAD & BSAVE command do not work on tape! The solution to this is to reload using the machine code monitor thus:-

```
monitor<RETURN>l"find"<RETURN>x
<RETURN>.
```

Once loaded, use the appropriate sys command, ie. sys 4864 <RETURN>. You can get the find routine to sit in a different location in memory by altering the value assigned to the variable 'loc' in the line 610.

More ambitious programmers should note the way the find command is implemented. The routine is patched via the ERROR VECTOR at $0300, and then picks up the command from the BASIC INPUT BUFFER at $0200. If the command doesn't start with a '←' or a quote it continues the normal error routine, otherwise it executes the find program. Since the same areas are used for the ERROR VECTOR and the BASIC INPUT BUFFER on the VIC-20, CBM-64, C-16 and PLUS-4, conversion of commands implemented this way is simple. Also since the routine is only called when a non-standard command is used, normal program running speed is not impaired (unlike other methods), and finally since no other utility links up in this way, it should be 100% compatible with other Basic extensions. It can only, however, be used for commands which are to be used in direct mode.

Happy finding! Now where did I use k9%.....

```
100 rem" Loader for find utility
110 rem" (C) Adrian Millett 1986
200 print"■Find utility,■by Adrian Millett.
210 print"■This program will allow you to
220 print"search a basic program for a certain
230 print"statement or combination of characters,
240 print"in fact anything! After running this
250 print"program, load the basic program you
260 print"are working on. To find something, type
270 print"■←<statement>    and lines containing
```

```
280 print"■that statement will be listed, ie ←rem
290 print"To find something contained in quotes,
300 print"type:-  "chr$(34)"<string>    ie.  "chr$(34)"and
310 print"will list all lines containing the word
320 print"'and' within quotes. The character !
330 print"can be used as a 'wildcard', ie. ←m!d
340 print"will find mod,mad,med, etc.
599 :
600 rem" Read in the data
610 loc=dec("1300"):rem" Start location of m/code, change this
    to relocate.
620 dest=loc+dec("cc"):rem" End of m/code
625 bank15
630 restore
635 sum=0:ln=5010
640 for x=loc to dest
650 read a
660 if a<0 then gosub1000:goto 650
665 sum=sum-a
670 poke x,a
680 next
690 read a:gosub1000
699 :
700 rem" Patch to ensure correct running if relocated
710 if loc<>dec("1300") then poke loc+1,(loc+11)and255:
    poke loc+6,(loc+11)/256
799 :
800 rem" Save ?
810 print"■Use sys"loc"to initialise before use"
820 print"■Save to Disk, Tape or End (d,t,e) ?";
830 getkey a$
840 if instr("dte",a$)=0 then 830
850 if a$="e" then end
860 n$="find128.("+mid$(str$(loc),2)+")"
870 if a$="t" then 2000
880 bsave (n$),u8,b15,p(loc) to p(dest)
990 end
999 :
1000 rem" Checksum
1020 if a<>sum then print"■Typing error in line"ln:end
1030 ln=ln+10
1040 sum=0
1090 return
1099 :
2000 rem" Patch for tape-save
2030 print"■■■■■s";chr$(34);n$;chr$(34);",1,";hex$(loc);",";hex$(dest)
2040 poke 208,3
2050 poke 842,13:poke843,asc("x"):poke844,13
2090 print"■";:monitor
2499 :
5010 data 169,11,141,0,3,169,19,141,1,3,96,133,253,165,127,208,11,173,-1823
5020 data 0,2,201,95,240,9,201,34,240,5,165,253,76,63,77,173,1,2,240,-2077
5030 data 246,162,250,154,165,45,133,251,165,46,133,252,165,213,201,63,-2644
5040 data 240,11,169,63,141,0,255,165,251,5,252,208,10,169,0,141,0,255,-2335
5050 data 162,128,76,63,77,160,4,169,95,133,254,177,251,240,61,201,34,-2285
5060 data 208,10,56,169,129,229,254,133,254,24,144,42,166,254,236,0,2,-2310
5070 data 208,35,205,1,2,208,30,162,0,189,1,2,240,43,201,33,240,4,209,-2013
5080 data 251,208,6,232,200,208,239,240,14,224,0,240,5,136,202,24,144,-2573
5090 data 247,200,240,2,208,191,160,0,177,251,170,200,177,251,134,251,-2859
5100 data 133,252,24,144,143,160,2,177,251,170,200,177,251,160,0,140,-2384
5110 data 0,255,164,251,132,97,164,252,132,98,32,35,81,169,0,141,0,255,-2258
5120 data 169,13,32,210,255,169,63,141,0,255,24,144,199,0,-1674
ready.
```

Program

Dictionary Reader by Ian Bennett

C-128/C-64

This is a short routine to enable you to examine Easyscript's Easyspell dictionary. (I believe it will also work on the Superscript version.) This programme was written after seeing an article in the July/August ICPUG (Independent Commodore Products Users Group) Newsletter. In brief, it explained how someone had decided to try and use a Superscript dictionary as a word source. As it was compressed to save disk space it was not easily readable. This was done by Jonathan Cooley whose solution appeared in the said newsletter. Curiosity got the better of me and I set out to write a routine to enable me to view its contents. The programme will work on most Commodore machines. However, I don't know if the different versions of Easyscript/Superscript all use the same compression techniques. The programme is very slow in its BASIC guise but it should help to show the way.

```
10 INPUT"ENTER DICTIONARY NAME";N$
20 J=1:OPEN 1,8,2,N$+",S,R"
30 GET #1,A$:IF ST <> 0 THEN 90
40 GET K$:IF K$="←" THEN 90
50 FOR X = 7 TO 0 STEP -1
60 IF ASC(A$) AND 2↑X THEN T=T+2↑(5-C)
70 C=C+1:IF C=6 THEN C=0:GOSUB 100
80 NEXT:GOTO 30
90 CLOSE 1:END
100 IF J<>0 THEN J=0:RETURN
110 IF T=>32 THEN GOSUB 150:RETURN
120 IF F=0 THEN W$=W$+CHR$(T+64)
130 IF F<>0 THEN X$=LEFT$(O$,T):F=0
140 T=0:RETURN
150 T=T+32:F=1:W$=X$+W$+CHR$(T)
160 PRINT W$:O$=W$:W$="":T=0:RETURN
```


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Program

After The 'Big-Bang' .....

The 'privatisation' of national assets, like the TSB and British Telecom, together with the 'Big-Bang' on the Stock Exchange, are intended by our betters to turn us into a nation of shareholders. Here is a light-hearted look at the less-ugly face of capitalism.

The program purports to analyse shares for you, and to advise you whether or not to buy them. The author accepts no responsibility if you lose your shirt, but if it helps to make you a million he would not be ungracious enough to refuse some small gesture of appreciation (say 5%). In the meantime, he hopes that this item will appeal to beginners, since it is simple to follow, and amuse the more sophisticated. Either way, it may give you a new interest in the daily Stock Exchange lists in your newspaper. You can keep track of the amounts you would have gained or lost if you had taken your computer's advice!

The underlying theory is not completely ludicrous. But it is based on assumptions which are not necessarily borne out in practice.

The first assumption is that if, during the current twelve months, a share has reached a certain figure then (all other things being equal) it could do the same again. One is looking, therefore for shares which are not at their peak at the moment: where there is definite room for improvement, even if they never top their previous best.

The second assumption is that someone looking for a capital gain should be prepared to make do with a modest income in the meantime.

The usual Stock Exchange pages in the quality papers give (at least) four items of information about each share (i) its current price (ii) the highest price for which it has changed hands in the past twelve months (iii) its lowest price over the same period and (iv) the current yield (i.e. the income, based on recent dividends, but expressed as a percentage of the current price). The 'system' provides for all this information to be fed into the computer in answer to prompts.

Lines 10 — 100 cover the prompts and the inputs. Each of the inputs has assigned to it a numeric or alphanumeric variable.

Line 110 asks whether the share is to be bought, and the answer ('Yes' or 'No') is duly given.

How does the program analyse the shares?

Line 120 defines the difference between the current price (what you will have to pay to buy a share now) and the highest price it has reached so far in the current twelve months (i.e. the figure you hope it will attain again). The difference ("Z") is the profit you hope to make. The 'system' assumes that an investment is not worthwhile unless "Z" (the anticipated profit) amounts to a minimum figure.

The minimum is approached in two ways. First, it must be at least 40% of the difference between the highest and lowest figures for the year (HY-LY, to use the variables assigned to these figures in the program). Second, it has to be at least 20% of 'today's price'.... after all, you would not pay £1.00 for a share unless you thought it likely to reach at least £1.20 eventually.

Let us assume, therefore, that you are looking at a share standing at 79p where the price had varied over the year between 100p and 70p. The difference between the present price and the highest price is 21p. That is more than 40% of the difference (30p) between the highest and lowest. So it passes the first test. Line 151 puts it through the second test. The prospective gain (21p) expressed as a percentage of the current (i.e. purchase) price of the share (79p) is obviously more than 20%.

In fact, the third test keeps a low profile in line 150. This provides that if the yield is less than 5%, the answer to the question 'Buy?' is 'No.' (I wondered whether to include this. The 5% is, of course, quite arbitrary, and you might decide that 6%, or even 4%, better expresses your own emphasis on income at the expense of capital, or vice versa. So if you are going to decide it... by altering the figure 5 in line 150... why need it be included in the program? After all, if *you* have fixed the minimum yield, you will not waste time entering details of shares where the yield (which is given in the newspaper) is less than your minimum. But I decided to keep it in, as a reminder that yield *is* an element in the calculation and must be taken into account. Having reached this decision, I then felt it best to incorporate it in the formula, just in case someone entered the yield but did not notice that it was below the minimum. After all, stranger mistakes have been made before!)

When entering prices, do not use '£' or 'p' or '$' signs. Just type in the figures. The program is concerned only with percentages, not with the denomination of the currency involved. Provided you use the same basis in each of the three prompts dealing with price, all will be well. On the other hand, the program would be botched if you answered one prompt in £'s, and another, relating to the same share, in pence. Fortunately the newspapers usually observe this discipline so there should be no real difficulty in answering the prompts. However, you sometimes do get an entry where the year's highest figure is given in £'s, the lowest in pence, and the current price in £'s again. Where that happens, you will have to change the pence into pounds, or vice versa.

When your computer has completed the calculation it will tell you whether or not to buy the share. Then you will be asked (line 190) whether (Y/N) you want to enter other items (i.e. repeat the process with another share). If the answer is "N" then the program proceeds to line 219 and ends after the words "We'll end then" have appeared on the screen. But if you answer "Y", this fussily user-friendly program asks if you wish to take a note of the details on the screen. Of course, if you are a programming genius, and are not too busy making

your fortune in stocks and shares, you could write an addition to the program so that it will record this information for you on disk. But you may prefer to write it in a note-book with the date and keep track of the shares over a few weeks (or longer if you actually buy some!) As it is, the program is intended to halt at that stage, to give you time to jot down the particulars, before typing 'OK' to activate it again.

You may tire of this school-marmy reminder about taking notes. You could, or course, delete lines 211-216 and add a new line 211 saying, simply, GOTO 10. But if you did that, the screen would clear and you would not have a chance to jot anything down. Instead make line 211 say GOTO 20. The screen will look messy, but at least there will be something left to jot down if you decide you should.

The million-dollar question? Does the formula work? Well, if it were infallible, I wouldn't be typing articles for mags now would I? I have never carried out an in-depth test. But where I have spot-checked, it does seem to work in a modest way. I have applied the program to some shares at August 23rd figures, picked out a few which the program told me to buy, and then compared the prices on October 29th. All those I checked seem to be moving in the right direction. And this is not just a general market trend because between the two dates the F-T Actuaries 'All-Share' Index had dropped from 794.23 to 786.97. In theory, the ideal is to buy shares at their lowest. The snag is that you never know (until they hit zero!) that there is no room for a further drop. In practice, then, you would ignore shares which are right at rock bottom; leave them until they pick up slightly. You are really looking for something comfortably above the lowest figure.

I hasten to add that this program is intended for amusement only. If a share can re-gain its peak, it can also sink again to depths it has already visited. This program, after all, was written by someone who was so sure that the CBM was a world-beater that he bought some Commodore shares, with impeccable timing, a few weeks before Jack Tramiel decided to unload his 2 million shares! I was absolutely right about the CBM 64. But we all know what has happened to Commodore since then. I did not at that time, of course, have the benefit of this program's guidance. But, alas, not even this program can tell you which key-men are about to resign from a company!

The trouble with big bangs (we re-learn it each year on 5th November) is that they often cause fingers to be burnt.

P.M.

Editor's Note:
We felt this program would both amuse and be very appropriate just now. By the way, with the announcement of substantially improved profits, Commodore shares are on the way up again! Another good mark for Peter McDonald.

```
READY.
5 REM:BIG-BANG:PETER MCDONALD
6 REM:OCTOBER 1986
10 PRINT"(CLR)"
20 PRINT"ENTER NAME OF COMPANY BELOW"
21 INPUT S$
30 PRINT:PRINT"TODAY'S PRICE"
40 INPUT PP
50 PRINT:PRINT"HIGHEST PRICE DURING CURRENT YEAR"
60 INPUT HY
70 PRINT:PRINT"LOWEST PRICE DURING CURRENT YEAR"
80 INPUT LY
90 PRINT:PRINT"TODAY'S YIELD %"
100 INPUT X
110 PRINT:PRINT"BUY?"
120 Z=HY-LY
130 Q=HY-PP
140 IF (Q/Z)*100>=40 THEN GOTO150
141 GOTO 170
150 IF X<=5 THEN GOTO 170
151 IF (Q/PP)*100<20 THEN 170
160 PRINT"YES":GOTO 190
170 PRINT"NO": GOTO 190
190 PRINT:PRINT"DO YOU WANT TO ENTER OTHER ITEMS (Y/N)"
200 INPUT A$
210 PRINT:PRINT:IF A$="N" THEN 219
211 PRINT:PRINT"DO YOU WISH TO NOTE THE ABOVE (Y/N)"
212 INPUT B$
213 IF B$="N" THEN 10
214 PRINT:PRINT"WHEN YOU ARE READY TYPE 'OK'"
215 INPUT C$
216 IF C$="OK" THEN 10
219 PRINT:PRINT"WE'LL END THEN":END
READY.
```

Datamaker

Datamaker is a utility program written in machine code for the CBM 64. The program will take a specific section of machine code or data from memory and turn it into ordinary BASIC data statements in a program. It is very useful for putting sprite or character set data into program form for easy saving, loading and use from a BASIC program.

Datamaker resides at 49152 ($C000 Hex) and so will not interfere with any normal BASIC program.

To use the Datamaker, type in the loader program and save it for safekeeping. It includes a checksum routine to spot any errors.

Once it is in memory, the command:

SYS 49152,a,b,c,d,e

will produce data statements starting at line number 'b' for 'c' lines. The difference between successive line numbers is 'd' with 'e' data items on each line. The data is taken from memory starting at 'a'. For quantities of data lines, the computer takes a while so don't be surprised if nothing happens for up to a minute or so.

The lines are entered just as if you were typing them from the keyboard and all housekeeping such as overwriting lines and inserting lines is handled. Simon Anderson who wrote it is 15 and we think it is first class work for a programmer of his age.

```
10 L=49152
20 FOR X=0 TO 15:T=0:FOR Y=0 TO 14
30 READ A:IF A <0 OR A >255 THEN 60
40 POKE L,A:L=L+1:T=T+A:NEXT
50 READ A:T=T-(INT(T/256)*256)
60 IF T<>A THEN PRINT"DATA ERROR IN LINE"100+(X*10)"CHECKSUM <>"A:STOP
70 PRINT100+(X*10)"OK":NEXT
100 DATA 032,186,192,165,020,133,251,165,021,133,252,032,186,192,165, 077
110 DATA 020,141,167,002,165,021,141,168,002,032,186,192,165,020,141, 027
120 DATA 169,002,165,021,141,170,002,032,253,174,032,235,183,165,020, 228
130 DATA 141,171,002,165,021,141,172,002,142,173,002,169,131,141,000, 037
140 DATA 002,162,001,172,173,002,032,196,192,169,044,157,000,002,232, 000
150 DATA 230,251,208,002,230,252,136,208,238,202,169,000,157,000,002, 237
160 DATA 160,000,185,000,002,240,003,200,208,248,200,200,200,200,200, 198
170 DATA 173,167,002,133,020,173,168,002,133,021,169,128,141,002,003, 155
180 DATA 169,192,141,003,003,032,162,164,024,173,167,002,109,171,002, 234
190 DATA 141,167,002,173,168,002,109,172,002,141,168,002,172,170,002, 055
200 DATA 174,169,002,208,001,136,202,140,170,002,142,169,002,192,000, 173
210 DATA 208,145,224,000,208,141,169,131,141,002,003,169,164,141,003, 057
220 DATA 003,104,104,076,116,164,032,253,174,032,138,173,032,247,183, 039
230 DATA 096,152,072,138,072,160,000,177,251,133,099,132,098,162,144, 094
240 DATA 056,032,073,188,032,223,189,160,000,104,170,185,000,001,240, 117
250 DATA 008,157,000,002,232,200,076,221,192,104,168,096,000,000,000, 176

READY.
```

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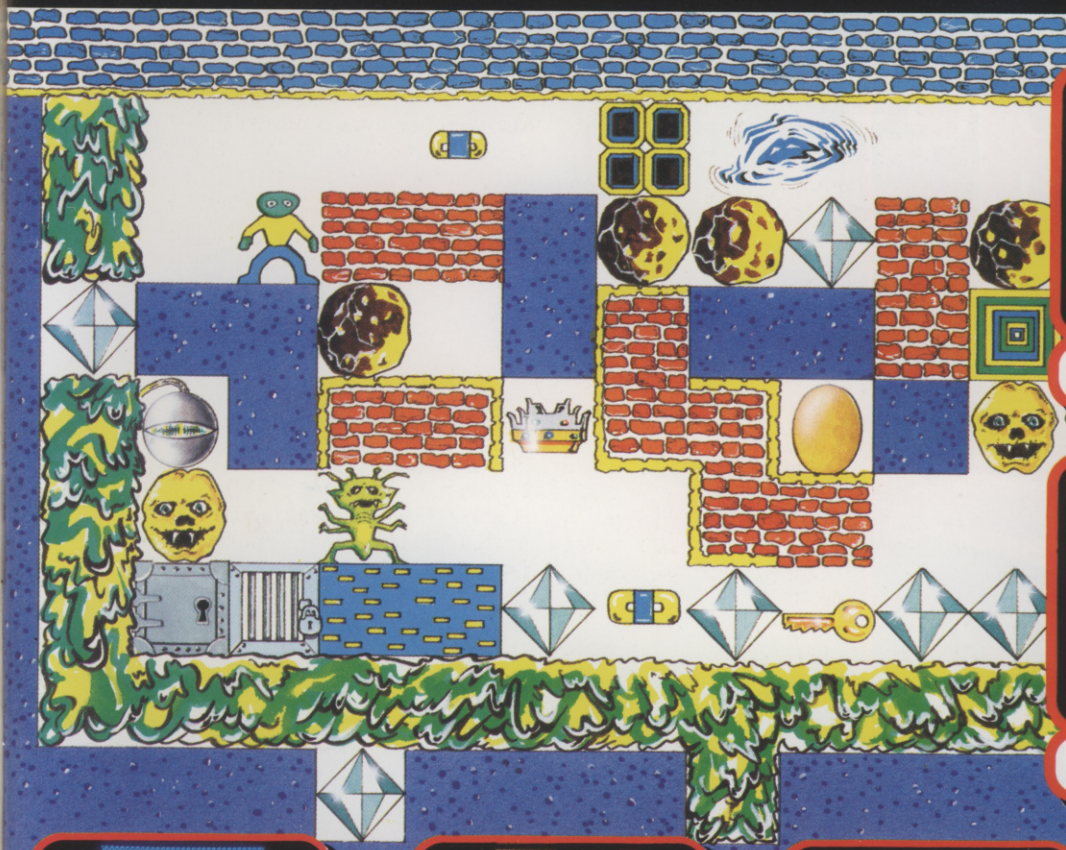
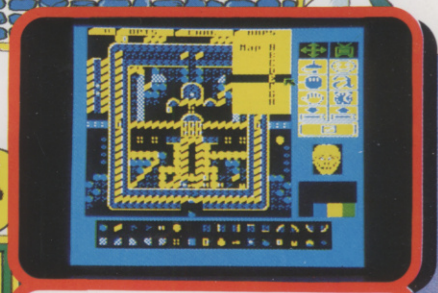
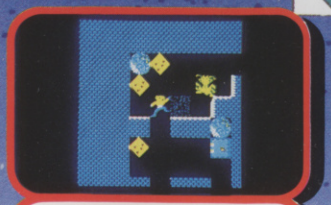




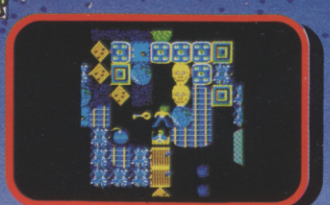
The Screen Editor.

The Character Editor.

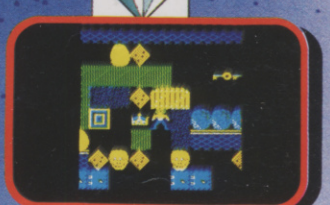


Being pursued by a Monster

The Time Bomb is located



The Poisonous Fungus grows insidiously



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Our original Repton game was immediately acclaimed as a refreshingly new concept: a game requiring dexterity to complete its arcade-style elements, and clear logical thinking to solve its strategic puzzles. Repton involves retrieving treasure from cleverly-constructed traps of falling rocks whilst avoiding the fearsome monsters and haunting spirits. "This is an astounding game reaching new heights in BBC arcade adventures," enthused the Micro User magazine.

Last Christmas saw the release of Repton 2, larger and much more challenging than before. Acorn User's Technical Editor Bruce Smith wrote: "Repton 2 is better than anything I've played on the BBC Micro or Electron. Brilliant!"

Now, completely rewritten and improved for the Commodore, Amstrad, BBC Micro and Electron, we proudly present Repton 3. For the first time, a screen-designer is included: try to devise screens that will perplex your friends, then see if you can solve their newly-designed screens. Another innovation is the character-designer which enables you to design your own monsters, rocks, eggs, spirits, diamonds . . . any or all of the game's characters can be redefined as you wish.

Repton 3 is much larger than its predecessors — it has 24 fascinating screens, and players who are skilful enough to complete them all can enter our prize competition described below. All the favourite Repton characters have been retained, together with several new features: a creeping poisonous fungus which grows at an alarming rate; time bombs and time capsules (for puzzles in the 4th dimension); and golden crowns as well-deserved rewards for your endeavours. **Can YOU complete Repton 3?**

PRIZE COMPETITION

If you complete Repton 3, you can enter our competition. Prizes include over £200 in cash, with T-shirts, mugs, badges and pens for runners-up.

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The screen pictures above show the BBC Micro version of Repton 3.

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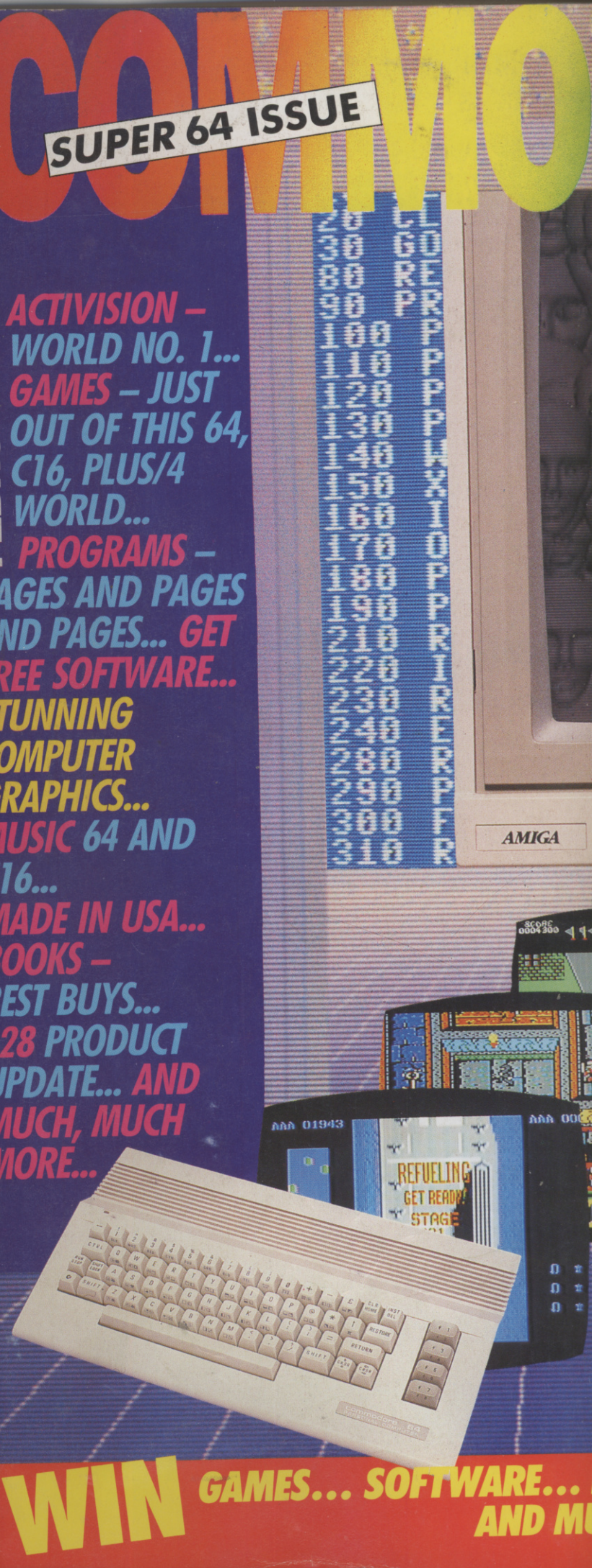

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